

**CAN WE IDENTIFY THE BASIC TOOLS NEEDED  
FOR POLICY ANALYSIS IN DEVELOPING COUNTRIES**

Arnold C. Harberger

University of California, Los Angeles

It is now a little more than six decades since I took my first graduate courses in economics (during 1946). Lots of things have happened over this period -- crazy policy experiments, explosive inflations, devastating economic crises, commodity (especially oil) price gyrations, problems with drugs and migration. Through it all, economic research has marched ahead at a steady pace, and the “standard” curriculum of our graduate economics departments has steadily evolved. There can be no doubt that economists being trained today are exposed to a much more sophisticated set of theories, and in general to a much more formalized discipline than we saw in the late 1940s on through the 1950s.

I readily concede that this evolution has brought significant gains. Notable among them is the profession’s outgrowing its fascination with what I sometimes call “free-lunch” Keynesian thinking, which took a model which was quite apt for economies in which a quarter of the labor force and probably a similar fraction of the capital stock were unemployed, and applied it to a whole gamut of cases in which these key conditions did not prevail. Here was a case of a model which had reasonable applicability to one set of circumstances being applied very generally, most often in circumstances where, instead of adding to our insight and understanding, it clouded our vision and caused us to misread the signals that the economy was sending.

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We have by now overcome that problem, but I and others are seriously worried about whether we have not fallen into different but analogous traps as we have moved ahead. I will give two examples here.

1. Many “representative consumer” models deal with the dynamics of an economy in which the representative consumer solves “his problem” of choosing how to divide his time between labor and leisure and his cash flow between consumption and investment over a sequence of periods (ranging from two to infinity). One key feature of most of these models is that the phenomenon of unemployment, as most of us understood it, simply does not exist -- workers are “on their labor supply curves at all times”. How can such models help us understand, let alone deal with, the problems of cyclical and long-term unemployment that we observe in the real world? How can they help us understand cyclical fluctuations in general?

2. Most models embodying standard rational expectations assumptions end up predicting huge overshoots during the process of dynamic adjustment to shocks of one kind or another. One favorite example of mine posits a change in the rate of expansion of the money supply from, say, 10% to, say, 20% in a static economy with a fixed level of output (and assuming the economy’s resources are fully employed). The equilibrium rate of inflation in that economy moves, quite clearly, from 10% to 20% per year as a consequence of this shock. The models I’m complaining about have economic agents immediately capturing and internalizing the shift of monetary policy -- thus their real cash balances have to go down immediately to reflect their new expectation of a 20% rather than a 10% annual tax on their real cash balances. The time path of the price level, on semilog paper, is described by a straight line rising at 10% per year up to the point of the shock, then at that point taking a discrete jump upward, after which it follow another straight line rising at 20% per year. The time path of the rate of inflation is a steady 10% per

year prior to the shock, plus a steady 20% per year after the shock, with a huge spike at the point of the shock, sufficient to cause an instantaneous rise in the whole price level. If we think in periods of a year, and start with a price level of 1.0 and a money supply of 1000 at the beginning of the year, a continuation of the old trend would bring the price level to 1.1 and the money supply to 1100 by the end of the year. But suppose that the equilibrium M/P goes down from 1000 to 800 as expected inflation moves from 10% to 20%. Now, by the end of the year of the shock, the “rational expectations” spike has to bring the price level to 1.5 (a money supply of 1200 divided by a price level of 1.5 will give us the real cash balances of 800 that puts the public on its demand function for real cash balances in the new situation). Thus in this case the models I am speaking of would have 50% inflation in the year of the shock, followed by 20% inflation thereafter. If the model were a monthly one of the same class, it would yield a price level of 1.267 (end of month money supply of 1013.3 divided by price level of 1.267 yields actual = desired real cash balances at the new level of 800). This implies inflation at a monthly rate of  $2\frac{2}{3}$  percent (= an annual rate of 320%) for one month, followed by  $1\frac{2}{3}$  percent per month (annual rate of 20%) thereafter.

This kind of model may serve a very modest purpose in helping to explain the phenomenon of overshooting and undershooting as the economy moves from one equilibrium to another. But it is so unreal in so many respects that it deserves not much more than a footnote in any attempt to explain the dynamic adjustment processes we observe in the real world. Of primary importance in such an explanation are the lags in economic agents perceiving and internalizing the message that a particular shock is “permanent” or at least long-lasting rather than transitory.

This brings me to a second but related complaint -- this one concerning the allocation of

classroom time in our graduate (and undergraduate) courses. A Ph.D. program in a quarter system will typically involve 3 courses per quarter, three quarters per year, for 2 years of classroom work. Classes usually meet 3 hours a week for 10 weeks, in such a system. Thus we have 30 classroom hours per course, 18 courses per program, which adds up to 540 classroom hours in a typical Ph.D. program. To me, this signals a huge problem of time allocation. As I see it, there is simply no time for frills in any aspect of the program. We need to teach the fundamentals of economic processes, the fundamental skills of observing and diagnosing economic situations, the fundamentals of data analysis and hypothesis testing. What I fear is that by following novel trends too assiduously, we have ended up short-changing our students on many of these fundamental elements.

In what follows, I will try to give readers a sense of some aspects that I consider to be fundamental and that I feel are missed or grossly underemphasized in the training of a great many Ph.D. students, even those specializing in areas of policy economics. In presenting these “cases” I will make no attempt to give “equal time” to each of them. Where a short comment will suffice, that is what you will see; where a longer comment is needed or advisable, that will be given.

1. The Classical Dichotomy: This represents the idea that we can, at least conceptually, think that an economy has a real equilibrium in which real quantities and relative prices are determined, and that in some sense “lives” out there, independent from elements on the monetary side of the economy. Like most economic abstractions (and most economic theory) this dichotomy oversimplifies the real world -- but it is an incredibly useful oversimplification. To me, it is absolutely critical in making projections of supplies and demands, of relative prices and real wages, of industrial growth and decline. Nothing in the economic textbooks can help us

predict Brazil's or Turkey's or Russia's price level for 10 or 20 years hence, but we can reason sensibly about the time paths of their future real GDP, their future real wage level, their future real interest rate, their future real exchange rate, etc.

At another level the classical dichotomy comes into play as we find an economy facing a current disequilibrium (or need for fundamental adjustment) in its economic connections with the rest of the world. Often such disequilibrium calls for an adjustment of the country's real exchange rate. The message of the classical dichotomy is that the new real equilibrium (toward which the economy is headed) is largely independent of its exchange rate system. If it has a flexible rate system, adjustment is likely to come more quickly, and often at a higher general price level. If it faces a fixed exchange rate system the dynamic process by which the new equilibrium is reached will be quite different, and the whole adjustment process slower, but the idea is that there is a "target" out there, which in real terms is substantially independent of the adjustment mechanism at work (within a family of adjustment mechanisms that do not themselves involve introducing new distortions into the price mechanism). That idea is a great boon to analysts struggling to interpret events and design policies in our complex world.

2. The Need For Relevant Numeraires: Models of general equilibrium typically involve  $n$  commodities and  $n-1$  relative prices, the latter being expressed relative to  $p_n$  -- the price of the numeraire good. In these models any good's price or any index of prices can equally well serve as the numeraire, but in dealing with any real-world problem that is just a dumb idea. Imagine a statistical abstract measuring real wages in barrels of oil, or a nation's GDP in terms of tons of copper. True -- the real phenomena we observe would be no different, but in interpreting any observed movements, we'd have to spend at least half our time splitting up the real wages story into a part that reflected events in the world market for oil, and into another part that more

basically reflected events in the labor market. Similarly, analyzing the movements of GDP measured in tons of copper, half our job would be separating these movements into a component reflecting happenings in the world copper market, and another component that more genuinely reflected the basic forces underlying GDP, growth of the labor force, changes in its quality, rate of real investment, the real rate of return on that investment, and changes in that economy's total factor productivity.

There is no such thing as a perfect real-world numeraire, but those who have thought most about the problem have pretty much settled on two candidates that meet the criterion of feasibility and usefulness. These are first, a general index of prices of things consumed (CPI) and second, a general index of prices of things produced (GDP deflator) in an economy. Each of these has its own advantages and limitations, but both are meaningful, readily available and yield relative prices where movements don't have to be laboriously "cleaned up" in order for us to make sense of the reality we're looking at.

On the above two numeraires there is, I think, little disagreement. But then, I ask, how many graduate students are taught to always think in terms of real prices? How many time series on prices are routinely presented to readers in real terms? In short, I think we have some distance to go in terms of helping people understand economic events by emphasizing (particularly where prices are concerned) the real side.

My biggest gripe, however, concerns the sluggishness of our profession in recognizing the great need for a second numeraire -- an index of the general price level of world tradables. The need for such an index flows naturally from real exchange rate economics. What neater definition of a country's real exchange rate than "The number of that country's GDP baskets that

it takes to buy one standard basket of world tradables?”<sup>1</sup>

3. The Monetary Approach to the Balance of Payments: This approach really “reached” the profession in the early 1970s, but it was foreshadowed by earlier work, especially at the IMF, where the names of J.J. Polak, S.C. Tsiang, and R.A. Mundell all figure prominently. In my own perhaps simplified interpretation, the monetary approach really embodies the core of monetary theory. This consists of two propositions:

i) There exists at any one time in an economy a demand function for real monetary balances, in which the demand for, say,  $M2/p$  or  $M3/p$  depends on real variables -- real income, real wealth, real interest rates, etc., plus the expected rate of inflation, which is also a real variable (because as a percentage tax on nominal balances, it also taxes real balances at the same rate, and because real interest rates are defined by nominal interest rates minus the expected rate of inflation). “Money demand” thus defined can be denoted generically by  $(M/P)^d$ . It is determined not by monetary policy but by “the public”. On the supply side we have the nominal quantity of money  $M_s$ , which is at least to a degree determined by monetary authorities, through

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<sup>1</sup>I have long urged the creation of a price index of world tradables, preferably by the IMF. No one has yet told me it was not a good idea, but people in the IMF have stressed how long and painful is the task of effectuating a change in the content of International Financial Statistics. Maybe the answer is for some other department of the Fund to take on the job of calculating the index of world tradables prices, and letting the IFS incorporate it in its publications when it so chooses. If not the IMF, then some other entity (the Federal Reserve?, the European Central Bank?, the OECD?) should take the lead. I have long used, and published in various places, what I call the SDR-WPI. This takes a country’s wholesale price index as referring predominantly to tradables prices. It then considers Japan’s WPI (multiplied by a  $\$/¥$  exchange rate), the U.K.’s WPI (multiplied by a  $\$/£$  exchange rate), etc., etc., to be independent estimates of the “world price level of tradables”, expressed in dollars. The SDR-WPI then weights these estimates with the weights that the IMF uses in constructing the SDR. My SDR-WPI series only begins at the point when the constituent currencies of the SDR were reduced to five -- the Yen, the British pound, the French Franc, the Deutschmark and the U.S. dollar. Chained weighting changes are used to smooth the occasional changes in the Fund’s weighting system for the SDR, and also for the introduction of the Euro in place of the franc and the Deutschmark.

rediscount rates, open market operations, reserve requirements and the like. It is an absolutely key proposition of monetary theory that while  $M_s$  is determined or at least influenced by the monetary authorities,  $(M/P)^d$  is not determined by them but by the people.

ii) This leads to the second key proposition of the monetary approach: that when  $(M/P)^d$  differs from  $M_s/P$ , people will try to eliminate that difference. When their monetary balances are too large, they will try to bring them down by spending the excess (usually gradually over a period of time); and when the balances are too small, people will try to build them up, again usually gradually. In the process of spending excess balances, they will spend part on nontradables which will tend to raise their internal relative price, and part on tradables, which, with an exchange rate that is fixed or policy-determined (a la tablita) even in the short run, will lead to a loss of international reserves by the Central Bank. Likewise, a shortfall of  $(M/P)^d$  below  $M_s/P$  will lead in similar situations to an accumulation of international reserves. A corollary is that Central Banks can attract reserves by putting on the monetary brakes, and can lose reserves by stepping on the accelerator -- even without perceptible changes in interest rates and relative prices. These changes are likely to be present, but the big lesson of the monetary approach is that they typically do not carry the main weight. The mere presence of an excess or a shortfall between the demand for and the current supply of monetary balances is enough to trigger an adjustment process that is capable by itself of bringing about equilibrium.

4. The Consolidated Balance Sheet of the Monetary System: This is a simple statistical artifact that considers the system that generates a broad concept of money like M2 and M3. Its liabilities consist mainly of broad money (e.g., the IFS's Money plus Quasi-Money), its assets are mainly Net Foreign Assets plus Credit to Government plus Credit to the Private Sector. Other items enter, but they are not important for most problems of economic analysis or for

classroom presentation. Consider how an inflationary policy impacts this balance sheet.

Nominal Money ( $M^s$ ) is roaring ahead at 20%, 30%, or 50% per year, but people's desired real cash balances  $(M/P)^d$  are far less than they would be in a stable monetary environment, and probably less than they actually were -- pre-inflation -- in a real-world inflationary episode.

This reduction in desired real balances leads to an inflationary "equilibrium" in which  $(M/P)_t^d$  is more or less equal to  $M_t^s / P_t$  as the economy moves through time. In this "equilibrium" real monetary balances are significantly below their pre-inflation level. Hence, something on the asset side has to be squeezed also. Maybe there was a reduction in Net Foreign Assets (via loss of reserves of the Central Bank), though private banks will probably try to build up their foreign assets as an inflation hedge (or speculation). Government credit from the banking system is not likely to decline, especially in a phase of rapid monetary expansion, which usually entails the Central Bank (or the rest of the banking system) acquiring government paper period after period, to finance ongoing fiscal deficits.

The bottom line is that we have very good reason to expect that major inflationary episodes will end up involving a major squeeze of credit to the private sector (in real terms). The facts fully confirm this expectation. What is gratifying is that a simple, very basic approach to monetary analysis, based on the monetary approach plus the consolidated balance sheet, tells us that this is what we should expect, and at the same time gives us the tools to analyze how this process works, up to and including its dynamic evolution over time.

5. Recognizing Disequilibrium: Disequilibrium is not a pleasing word to most contemporary theorists. In fact, a great deal of the work of modern macrotheory has been to create complex dynamic models in which everything is in continuous equilibrium, the process being restarted as each new shock strikes the system. I admire the elegance of this approach but

find in it little of the strength and robustness of T.W. Schultz's prophetic sense that the agro-economy in the United States and most other countries was in an almost continuous state of disequilibrium, with the shocks of technical advance and modernization, as well as the rise of real wages in other economic sectors, calling for a continuous stream of migration out of agriculture, together with a continuous buildup in the amount of human capital per remaining farmer. I also greatly admire Alfred Marshall's brilliant conceptual leap as he created the distinction between the long run and the short run. What was so neat about Marshall's short run was that it represented at one and the same time equilibrium and disequilibrium. Variable factors had marginal productivities equal (in value or marginal revenue terms) to their market-determined rewards. Fixed factors had returns that could exceed or fall short of market rates, thus signaling dynamic adjustment processes that would bring them back to a market-determined rate of return as the system moved toward long-run equilibrium.

I will here consider two types of situations which reveal the importance of recognizing disequilibria or their absence:

1) In many countries over the years, most recently in Paraguay, December, 2006, I have found producers of tradable goods complaining about the low price of the dollar. Why, they say, is the Central Bank so blind as not to see that our problems could be easily relieved by a 20% or 30% or 50% devaluation of our currency? To which my reply has always been -- we must look to see why the dollar is so cheap in real terms. Most of the time the cheap dollar is an equilibrium phenomenon. In Paraguay and some other Latin American countries, an important source of an appreciated real exchange rate is a large, steady inflow of emigrants' remittances. This causes an abundance of foreign exchange and hence a cheap dollar. A devaluation of any percentage by the Central Bank would basically do nothing to change the real equilibrium.

Devaluing would be like taking an elevator in a high-rise building from a lower floor to a higher floor with an identical floor plan. My advice in such circumstances has always been (to those who complain about the cheap dollar) -- “Write your relatives and friends abroad and tell them, please stop sending remittances. And tell your neighbors to do the same. And plead with the government to urge that everybody do the same. That’s the way to generate a new real exchange rate equilibrium in which the real dollar won’t be so cheap.” Obviously this is a tough-love message, but a true one. If you want to sweeten the bitter pill, you might suggest that they ask their relatives to send the money to New York instead of to Asuncion or some other intra-country place. In New York that money could then be invested in trust funds for the later education of the family’s kids or grandkids. Thus the intra-family transfer would still be there, but the inter-country transfer would be postponed to a distant future and maybe even eliminated altogether (if the kids decided to study outside their home country).

The above was a case of people wanting to use the exchange rate to remedy an existing equilibrium situation. It has no effect. The exchange rate is serving as a nominal numeraire and simply raising all other prices along with it.

My next example is one of the real disequilibrium. I cite here Argentina during most of the latter 1990s. Sometimes a single observation can be the key to an important diagnosis. In the Argentine case, the observation is that the unemployment rate had reached 13% even before the so-called tequila crisis struck in December 1994. It remained near 15% all the way up to the 2001-02 currency flight and crisis, when it rose even higher. What is the story here? The story is that when the so-called convertibility law was promulgated (in 1991), that fixed the nominal exchange rate; the then-existing real exchange rate was “validated” by major inflows of foreign capital plus repatriations of Argentine funds. These inflows even helped to generate a rise in

internal prices, causing the equilibrium real exchange rate to appreciate further. But the inflows did not maintain their pace, and other forces also impacted the equilibrium real exchange rate, calling for it to be devalued in real terms. Since the nominal rate was tied one-for-one to the dollar, the only way for Argentina to generate a real devaluation was for its general price and wage level to fall. In my perception, the deflationary pressure was continuous all the way up to the ultimate devaluation of the peso. It was this deflationary pressure that led to the continuous high rate of unemployment, which wouldn't have happened if prices and wages had been able to flex downward as our classroom examples sometimes postulate. So the Argentine case was one in which there was clear evidence of a disequilibrium, for which the nominal devaluation would be a solution. All this ended in a terrible crisis, entailing a leap of the unemployment rate to over 20%. But in the end there was a major devaluation, with the price of the dollar rising from one to around three pesos. The general price level rose as a result, but by much less than the exchange rate. In my interpretation, the resulting real devaluation is a very important part of the explanation of Argentina's surprisingly rapid growth in the years that followed.

So the same policy tool can be totally ineffective (and probably net counterproductive) in a case like Paraguay's (starting from a real-exchange-rate equilibrium), while it can be a great stimulus and a genuine boon in a case like that of Argentina, where one is starting from a situation of clear disequilibrium.

2) In the next case, we consider situations of rising price levels in countries with fixed exchange rates. My instinct here, based on decades of observation of many real cases, is that most of the time such increase in the internal price level should be thought of as relative price adjustments rather than as episodes of "inflation". Put another way, in most of these cases what we are observing is a gradually appreciating real exchange rate, which sometimes might be

equilibrium all the way, and sometimes might represent a gradual approach to a new equilibrium. A-la Marshall, we sometimes might be able to say that a gradual rise in the price level might represent a short-run equilibrium at each point in time, while it simultaneously represents a gradual adjustment to a “target” level representing the new long-run equilibrium. How can this trick be explained? Quite easily. An export-price boom or a new flow of remittances or a new inflow of capital triggers the Central Bank into buying lots of dollars and issuing new pesos in return. This leads to an increased money supply, to an excess of  $(M^s/P)$  over  $(M/P)^d$ , and to spending that bids up the prices of nontradables. If the new flow of dollars were a “pulse”, this would lead to a progressive erosion of the initial jump of international reserves. But if the new flow is a continuing one, a new full equilibrium will be achieved only when the Central Bank is no longer a net buyer of dollars. That is, imports have to expand and/or exports decline (non-oil exports in the case of an oil boom) to the point where overall payments are in balance. The “new” foreign exchange coming from the “new” source has to end up being fully reflected either in increased imports and/or reduced exports.<sup>2</sup> What we see in this case is a series of “transitory” equilibria where the payments surplus ends up adding to international reserves. As the nontradables price level rises, the increment to reserves declines period-by-period. But so long as there is any increment to reserves, the price level will continue to rise. Full equilibrium will be attained when the net increment to reserves is zero.<sup>3</sup>

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<sup>2</sup>Reduced non-oil exports in the case of an oil-price boom.

<sup>3</sup>All this has to be modified for the case of a growing economy. There one should allow for a nominal increment of international reserves sufficient to be compatible with the increment of  $(M/P)^d$  that corresponds to the contemporaneous growth of aggregate output in the economy in question.

My main point here is to say that most of the time, internal price level rises in fixed exchange rate settings are simply reflections of an appreciating real exchange rate. Many cases exist -- Russia from 2000 to the present is a good example. There the exchange rate was not fixed by law but was kept within a relatively narrow range, while the price level moved steadily upward, without any sign of unwanted reserve loss. Another case is Chile over the past several years. There, a major copper price boom has led to an appreciating nominal exchange rate combined with steady but modest increases in the price level. Another case is Paraguay, where a real exchange rate appreciation has ended up with split effects -- about half of it being reflected in a nominal appreciation, and the other half in a rising price level. Should the Central Bank think of this price level rise as “inflation”? My answer is a very clear “NO.”

6. Rethinking Earlier Inflations: As an undergraduate and as a graduate student, I learned about the connection linking inflation to money creation and its twin, linking money creation to fiscal deficits financed at the banking system. Later, as I visited Latin America in the late 1950s and early 1960s, I thought I found multiple examples of these linkages in action. I saw the fiscal deficits; I witnessed their financing by money creation at the banking system; and I certainly saw the ensuing inflation. Theory learned; facts observed; theory confirmed -- or so I thought.

Imagine my surprise, then, when I realized that I had not seen what I thought I saw. The scenario described in the preceding paragraph would be a perfect fit to the facts, if my observations had been of countries with reasonably freely floating exchange rates. But such was not the case. The standard story of Latin American inflations in the 1950s and 1960s was one of continuing attempts to maintain a fixed exchange rate, interrupted by sporadic large devaluations. A country's exchange rate would be fixed; continuing fiscal deficits financed by

money creation would expand the money supply; prices would then rise on and on, fueled by the monetary expansion -- until, under a variety of pressures, the government announced another big devaluation to a new fixed rate. One outcome of this system was a sawtooth pattern of the real exchange rate -- the big devaluations were simultaneously nominal and real, but the new rate, fixed in nominal terms, was steadily eroded in real terms by the ongoing inflation, causing increasing havoc, particularly in the country's export sectors. Often, it was pressure from them rather than distaste for the inflation itself that was the main motivation for the next big devaluation.

Most, maybe even all professional observers were aware of this part of the story, too. We all saw the sawtooth movement of the real exchange rates, and concluded that it only added to the standard ill-effects of inflation per se. This led us to suggest policy modifications that allowed for more-or-less continual adjustment of nominal exchange rates as inflation proceeded -- an argument which led Chile and Brazil to adopt policies of "mini-devaluations" and in the Brazilian case of real exchange rate targeting (from the latter part of the 1960s until the late 1970s); under these policies, our old scenario story regained validity.

But that story was not valid under the stepwise-devaluation, sawtooth-real-exchange-rate scenario. The key question here is, how did the price level rise so much, in the presence of fixed exchange rates? Why did each country not undergo a sharp loss of international reserves, which then would drive the money supply back down? Why did the mechanisms of the monetary approach to the balance of payments not work in these situations?

The answer is that the government of those days interfered with that mechanism so as not to allow it to work. The true scenario of the sawtooth real exchange rate went like this: A new devaluation would set the economy on a better track and would probably engender a balance of

trade surplus for a while. But continued monetary emissions would quickly erode that surplus (not only did we have  $(M^S/P)$  greater than  $(M/P)^d$  for the public at large; also at work was the government's direct spending of its borrowings from the banking system -- some fraction of these were also spent on tradables. So, rather quickly, the balance of trade surpluses would shift to the deficit side, engendering a loss of international reserves. At this point the Central Banks' attention shifted to protecting their remaining reserves. Out came a whole grab-bag of measures -- import quotas, import prohibitions (on a list of items), import surcharges, import licensing, prior deposits for future imports. Sometimes governments were called upon to raise existing tariffs on imports. At other times export subsidies were introduced on specific items. Sometimes dual or multiple exchange rates were called into play, even while maintaining the original, fixed "basic" rate.

Without these patches and crutches, the drain of reserves would have quickly become intolerable and unsustainable, and either the inflationary money creation would have had to cease or the exchange rate would have to have been devalued much earlier and much more often, either becoming flexible de jure or coming close to it by approximating the later mini-devaluation schemes.

It is sad that this whole story is not widely known. Part of the reason is that it is so hard to research. How does one gauge the intensity and extent of import licensing restrictions when one has no access to data on the licenses that were granted? How does one even gauge the restrictive power of surcharges and tariff adjustments that are different for a myriad of import categories and anyway are changed every few weeks or months? The bottom line is that the task is far too daunting and difficult for serious research efforts to have emerged.

Nonetheless, the lesson is there -- sawtooth real exchange rate patterns are generated as

tariffs, quotas, prohibitions, licenses, prior deposits, surcharges, etc. are used to “bottle up” within the country a sequence of monetary expansions that normally, under a straight fixed exchange rate regime, would have far earlier been dissipated through losses of international reserves. One needs to recognize the key role played by those “international reserves defense mechanisms” in generating most of the Latin American inflationary experiences of the 1950s and 1960s.

7. Learning to “Think Bayesian”: I do not think that one can do a serious job of diagnosing economic situations if one approaches the world with a standard statistical hypothesis-testing mentality (i.e., new hypothesis  $H_1$  versus null hypothesis  $H_0$ ). There is nothing wrong with such hypothesis testing, but it is simply not the right suit of clothes for the diagnostician. Diagnosticians have to start out with a “view of the world” that covers pretty much the whole gamut of possibilities that is relevant in a particular case. Most of the things they see will likely “fit” into their “prior” view -- inflations leading to lower  $(M/P)^d$ , private sector credit being squeezed as a result, leading to a curtailment of the rate of investment and of the country’s rate of economic growth. A seasoned observer can scan lots of information without being particularly shocked or surprised. But then something happens to elicit such a reaction -- that should set in motion an effort to get to the bottom of the problem. In the case of the stepwise devaluations, the “old” scenario seemed to fit the facts perfectly well -- until I learned and internalized the monetary approach to the balance of payments. It was this that led me to ask, where was the large and growing trade deficit and loss of international reserves that I now had reason to expect would “surely” be there in the old scenario. It wasn’t there; hence a new explanation had to be sought.

Similarly, we have today many people who talk about “inflation” in Russia as if it were a problem for economic policy to try to solve. The answer is that it is not inflation but an adjustment of the real exchange rate, accomplished mainly through the internal price level rising and only modestly through the nominal exchange rate appreciating a bit. Again, if it were inflation of the usual kind, we would see huge losses of international reserves. Not only are these reserve losses absent, but there have been huge increases in Russia’s international reserves, mostly reflected in expanded quantities of Money plus Quasi Money.

This latter observation brings up another puzzle. With all that monetary expansion, why has not the price level risen much more? The answer is that the public’s demand for  $(M/P)^d$  has risen far faster than GDP. When one tries to explain why Russia’s price level did not multiply by 3 or 4 (as would be motivated by the observed monetary expansion), the answer is that there had been an absolutely huge amount of what I call “sterilization by the people” -- that is, people’s being willing to hold much larger cash balances than one would normally expect (based on their “old” demand function for  $(M/P)^d$ ). In Russia’s case, this is probably attributable to the shift from unpredictable, even chaotic economic policy under President Yeltsin to more stable, more orderly policy, plus more stable, more orderly expectations, that evolved once President Putin was in power.<sup>4</sup>

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<sup>4</sup>A similar, even more dramatic shift in the  $(M/P)^d$  function has taken place in China over the last decade or so. Part of the increase in monetary holdings is a direct function of the increase in income. But part comes indirectly as the conservative Chinese consumers adjust their consumption only slowly in response to huge increase in their real incomes. The resulting savings might, in some other countries, have quickly filtered into other assets like stocks, bonds, and physical assets. But in China they seem to have gone instead into savings accounts. Thus we have over ten years something like a fourfold increase in monetary balances with only a modest upward drift in the price level. Once again, it is “sterilization by the people”.

I should add here that “thinking Bayesian” represents a perfectly sound application of the scientific method. According to that method one theory is supplanted by another when that other theory provides a better explanation of the facts than the first. In Bayesian terms, we enter the scene with a set of “priors” that encapsulate all the previous evidence and experience available to us. When this set of priors is shattered by some new set of facts or some new approach, the challenge is to gain a new understanding that incorporates the new facts as well as the old, and based on this build a modified set of priors with which to face the future.

I cannot leave this section without bringing up an important aspect of Bayesian priors. One has to think of them as somehow embodying all our experience and understanding, and not just some formal experiment or two. I believe the “law of demand” to be utter scientific truth. If somebody fits a demand equation in which the fitted price-elasticity of demand is positive, I will not believe that future rises in relative price will cause future increases in quantity. If I have to make projections, I will impose a more reasonable elasticity based on other evidence.<sup>5</sup>

But how can I be so sure about the law of demand? What can I say? This is what economic theory tells me is true for the rational consumer (we are talking about compensated elasticities, not uncompensated ones, for our regressions and just about everybody else’s have real income as an additional determining variable.) Furthermore, I follow the Austrians in accepting introspection as an added source of information, particularly when I can check to see if my friends and acquaintances “introspect” the same way I do. But finally we have what I call

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<sup>5</sup>For example, in a recent paper James Cunningham and I fitted demand functions for household electricity for 49 states of the U.S. (Maryland had to be left out because its electricity data were co-mingled with those of the District of Columbia.) For our own work, in the few cases in which the fitted price elasticity was positive, we imposed one of zero. If I had to make projections I would probably prefer to use an average elasticity calculated for neighboring states, rather than zero. Certainly, I would never base a projection on the fitted, positive price elasticity.

mental experiments, which I find super-convincing, but which we hardly talk about at all in our professional discussion. An example follows.

Suppose somebody's regression somehow came up with a positive own-price-elasticity of demand for gasoline. To confront that, I ask readers to consider the recent rise in the price of gasoline and make a series of mental experiments. Consider the demand for gas in each of the 50 states plus D.C. In how many did demand go up (making corrections for changes in population, vehicle stocks, and income if such changes were important), and in how many did demand go down? Let's say demand went up in 5 out of 51 cases. One does not need to assume that all the states have the same elasticity. The hypothesis is that all true regression means are negative, subject to exogenous shocks and sampling errors so that positive observations are possible. Our binomial test compares this hypothesis with the null hypothesis that the means are zero. So we want the probability associated with getting 5 heads in 51 tosses of a coin. Significance level -- out of sight! But if that's not enough, make the same mental experiment for every county in the U.S. Then for every township. Then for every gas station. And finally for every vehicle-owning or vehicle-leasing entity. I end this mental experiment convinced that the ending significance level is one in a trillion or less. But any doubter can actually get to work with the actual data to check out this result. I predict that doubters would not have to go far down the chain -- from states to counties, etc., before they too were convinced that the law of demand was truly an "iron law".

8. Thinking Clearly About Labor Markets: In working in developing countries over the years, I have been impressed by how often people were reaching what I felt were wrong conclusions on the basis of what I thought was an erroneous picture of how labor markets work. Back in the old days we witnessed people making crude assumptions that the relevant

opportunity cost of labor was zero (to which I have always agreed, so long as the workers were willing to work for a zero wage). That fallacy has by now been largely surmounted but others remain, such as that workers in a firm “deserve” a rise in their real wage when per worker productivity in that firm increases, or that a stimulus to the demand for labor in an economy will first mop up most of the unemployed before engendering a rise in market wage levels. Or that changing a few laws will bring to wages their long-absent “downward” flexibility. To deal with a few of these issues, I have included an appendix on labor market issues.

Conclusion: In presenting the present potpourri of vignettes, scenarios, and reflections, my belief is that the items treated are basic enough, and important enough, and simple enough, so that one should expect that they would be part of the standard kit of tools of most economists as they finish their second year of graduate study. My own experience with such graduate students, as well as with recently-minted Ph.D.’s, tells me that to the contrary is true. Far too few of them seem to even have been exposed to most of the issues treated here, let alone to have incorporated them into their basic framework of thinking about economics and economic problems.

I have in mind a dream of helping to stimulate curriculum revisions that will rectify this situation. Ideally such revisions would be quite general, extending to most undergraduate and graduate programs, so this sort of insight would really be part of most economists’ toolkits. But if this objective is unattainable, then at least I would hope that these insights would reach those whose programs specialize in policy economics and even more particularly in policy economics for developing countries. I hope to be able to enlist the collaboration of like-minded colleagues, and to draw from them many other fundamentals-based suggestions, so that we can jointly mount a major push toward this goal.

## APPENDIX

Labor Market Equilibrium

This is an effort to set down in a succinct way some basic elements of labor economics that seem to me to be highly essential for applied economists -- particularly those dealing with public policies -- to have as part of their “working tools”.

Perhaps the most profound and pervasive principle of labor economics deals with the connection between the wage or salary of a category of workers, and the marginal productivity corresponding to that category. Certain key propositions emerge from an examination of this principle.

**a.** At the level of the firm, or even of the industry, it is the marginal productivity that is adjusted to make it equal (or more nearly equal) to the wage, not the wage that is adjusted to correspond to marginal productivity. Broadly speaking, the wages of labor are determined by supply and demand in the labor market. Where this is not the case they may be set by decree or by law (minimum wages), or they may reflect the power of particular unions in a collective-bargaining process. It really does not matter which of these processes was operative in determining the wage that prevails at a particular time for a particular firm. The managers of that firm will have to ask themselves the question, does it pay for this firm to add to or subtract from its existing use of labor of each given type? If adding labor will add to profits, it presumably will happen. The same goes if the way to increase profits is to reduce the use of any given kind or kinds of labor. (At this level of analysis, one should interpret marginal product to be “value of marginal product” in the competitive case, and to be “marginal revenue product” in cases where the firm exercises a significant degree of market power in the market for its output.)

**b.** An important corollary is that increases in the productivity of a firm's labor, such as those that occur as a result of new technologies or changed capital intensities do not in principle provide a motivation for changes in wages. "Shocks" of these types give rise to shifts (to the right or to the left) in the firm's demand curve for labor. The natural response is therefore an adjustment in the quantity of labor the firm hires, not in the wage that it pays (for a given type and quality of labor).

**c.** In interpreting the above, and in studying labor market phenomena in general, one must always be aware of the great diversity and, ultimately, heterogeneity of the "human factor of production". Thus, when one says there is a given market wage for a specific type of labor, one is really speaking of a band, not a single point. At the top of the band are those within the category who have more skill and/or experience, and/or those who simply put forth more effort, hence work harder. This leads to interesting subtleties of labor market analysis. For example, when a higher wage is "imposed" on a firm, it may well be able to partly (maybe even fully) offset the apparent increase in labor cost by "picking and choosing" from among potential workers those with more skill, experience, reliability, etc. It may also, faced with an abundant supply of willing applicants, demand and successfully extract from the workers a greater supply of effort per man hour. The key to understanding this type of adjustment is that it concerns a wage which is "toward the top of the band" for the category of labor in question. The capacity to pick and choose, or to demand greater than standard amounts of effort, stems from the fact that one is paying a higher than standard wage for the type of labor in question (i.e., one is operating "toward the top of the band").

**d.** In general, economists should work with the idea that the location of a firm, or a particular set of jobs, within the band of wages for a particular type of labor will normally be

determined endogenously. Thus, it may be true that in the present age, it requires much the same skills (aptitude for dealing with people, some minimal computer skills, a certain orderliness of mind) to be a night clerk in a small hotel or to be a ticket agent of a major airline at a big metropolitan airport. Yet without a doubt the ticket agents will be paid significantly more than the night clerks. Why? Because one “job” requires a very high degree of continuous alertness and effort, while the other is much less demanding, even though it uses the same skills. Thus needy graduate students often serve as night clerks, doing homework assignments and even taking intermittent naps. The low effort requirement of the job makes it easily compatible with the demands of graduate study, something that cannot be said of the job of a ticket agent. Normally, then, the labor market for a particular set of skills will be characterized by a band of wages or salaries, but particular employments will have quite definite places within that band. These can be regarded as “equilibrium positions” from the point of view of both the employers and the workers. The market faces both employers and workers with a menu (or better a continuum) of possible mixes of wages, skill, experience, effort, etc., even within a given “job category”. Demanders and suppliers then choose the mix that is most appropriate to them. If workers become more averse to hard work, the menu will change, and the premium for effort will increase, inducing demanders to choose less effort-intensive mixes, to the degree that they can.

e. The preceding two points have considerable bearing on the concept of “efficiency wages”, which has gained some currency in the recent literature on labor economics. The broad message is this: that the concept of equilibrium is as fully applicable to labor markets as to other markets. It is extremely unlikely, to the point of being unworthy of serious general consideration, that a firm will be able to accept an enforced rise in the wages it pays, and then be

indifferent with respect to staying with the new, higher wage on the one hand and returning to the initial starting point on the other. This does not say that the firm will not avail itself of all the mechanisms of subtle adjustment at its disposal, if it is forced to pay a higher wage. Using these mechanisms (having more scope for picking and choosing, insisting on greater effort, etc.) represents the firm's response to the "distortion" of an enforced higher wage, it does not mean that the distortion does not exist.

**f.** The same set of considerations can be applied to the phenomenon of so-called "dual" labor markets. These typically consist of a "formal" or "protected" sector of the labor market, where wages are high, and an "informal" or "unprotected" sector where wages are low. In its mildest variant, the dual labor market might simply be a special case of the band of wages referred to earlier, where the natural equilibrium wage for the formal sector is higher than that for the informal sector. Most of the discussion of dual labor markets, however, goes well beyond this point, and posits that the wage in the formal or protected sector is somehow set above the relevant market-clearing wage, producing a wage band significantly wider than would arise from the natural forces of the market alone. One by-product of this phenomenon is the appearance of quasi-voluntary unemployment -- consisting of people who are desirous of working at the protected-sector wage, but unwilling to work at the unprotected-sector wage. These people are usually counted as unemployed; at least if they can show that they carried out an active search for a job (even though that search might have been exclusively concentrated on employment in the formal or protected sector).

#### Unemployment and Labor Market Adjustment

There are a number of different scenarios that give rise to unemployment (quasi-voluntary, seasonal, long-term in depressed areas, etc.) I do not want to consider them in this

section, but rather to focus on the kind of unemployment that Argentina appears to have suffered in the latter 1990s and up through its recent crisis. I would characterize this situation as one of a labor-market disequilibrium that is at least of medium-term duration. Moreover, I would consider the disequilibrium to apply to a significant sub-segment of the overall labor market, not just to one or a few isolated areas and/or occupations.

i) Widespread unemployment exercises a downward pressure in real wages. The economy can respond to this pressure either by a rise in the general price level, causing real wages to fall so long as nominal wages are either rigidly fixed or simply sticky -- i.e., slow to adjust, or by a direct downward adjustment of nominal wages, if they are sufficiently flexible in a downward direction. Much experience with depressed labor markets indicates that adjustment via the general price level is both easier and quicker to accomplish than adjustment via reductions in the nominal wages paid by each enterprise to the affected classes of workers. The reason usually given as to why this is so concerns the level of "personalization" of the wage cut. When the general price level rises, no worker thinks that his employer is responsible for it; also, no worker harbors a suspicion that the general rise of prices was aimed at him. Such is not the case when individual enterprises try to reduce nominal wages, either across the board, or for particular classes of workers, or for individual workers. Even if the reduction is across the board for all workers of a firm, the workers may nonetheless harbor questions like "Why us, and not others in other firms?" When the reduction has only partial coverage, the question is "Why us, and not others in the same firm?" Subliminally, at least, there is always a doubt concerning whether the employer is taking advantage of the particular employees or groups in question. None of these issues arises when the reduction in real wages takes place through a rise in the general price level (though the issue may become complicated in an ambience of general

equilibrium all the way, and sometimes might represent a gradual approach to a new equilibrium. A-la Marshall, we sometimes might be able to say that a gradual rise in the price level might represent a short-run equilibrium at each point in time, while it simultaneously represents a gradual adjustment to a “target” level representing the new long-run equilibrium. How can this trick be explained? Quite easily. An export-price boom or a new flow of remittances or a new inflow of capital triggers the Central Bank into buying lots of dollars and issuing new pesos in return. This leads to an increased money supply, to an excess of  $(M^s/P)$  over  $(M/P)^d$ , and to spending that bids up the prices of nontradables. If the new flow of dollars were a “pulse”, this would lead to a progressive erosion of the initial jump of international reserves. But if the new flow is a continuing one, a new full equilibrium will be achieved only when the Central Bank is no longer a net buyer of dollars. That is, imports have to expand and/or exports decline (non-oil exports in the case of an oil boom) to the point where overall payments are in balance. The “new” foreign exchange coming from the “new” source has to end up being fully reflected either in increased imports and/or reduced exports.<sup>2</sup> What we see in this case is a series of “transitory” equilibria where the payments surplus ends up adding to international reserves. As the nontradables price level rises, the increment to reserves declines period-by-period. But so long as there is any increment to reserves, the price level will continue to rise. Full equilibrium will be attained when the net increment to reserves is zero.<sup>3</sup>

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<sup>2</sup>Reduced non-oil exports in the case of an oil-price boom.

<sup>3</sup>All this has to be modified for the case of a growing economy. There one should allow for a nominal increment of international reserves sufficient to be compatible with the increment of  $(M/P)^d$  that corresponds to the contemporaneous growth of aggregate output in the economy in question.

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inflation, where something approaching indexation or quasi-indexation of wages may have arisen in consequence of long experience with inflation).

An empirical exercise is all that is needed to convince an observer that in virtually no case where a country's level of real wages has fallen significantly has that real wage reduction come about mainly as a consequence of reduced nominal wages. In contrast, virtually every significant fall in the general level of real wages has come as a consequence of the general price level rising, while wages did not, or of the general price level rising significantly more than that of wages.

**ii)** The resistance of wages in the face of pressures for downward adjustment has been documented in data on the "asking prices" or "supply prices" of workers who are unemployed. The tendency of unemployed workers is to state a supply price which is close to the prevailing wage for their type of labor. The supply price varies little, even after considerable periods of unemployment. Unemployed workers may take temporary employment at much lower wages (e.g., an unemployed engineer might drive a taxi to contribute something to household income, while at the same time being unwilling to work as an engineer, except at something like the prevailing salary for engineers). This helps explain why unemployment is more easily absorbed through inflationary movement of prices than through deflationary movement of wages.

**iii)** It is a fallacy to think that increases in labor demand will first absorb large numbers of unemployed at given wages and only then start to have an impact on the general level of wages. Different scenarios of labor-market behavior lead to the same conclusion. On the one hand, one can think of a labor market in which some categories have significant unemployment, and others not. Increases in demand then cause wage rises in the segments that were initially in equilibrium of supply and demand, even if wages stay constant in the areas with significant

initial unemployment. As a result, the general level of wages (and prices) rises as a consequence of a generalized increase of effective demand.

On the other hand one can have a more subtle appreciation of how labor markets work. Under this scenario, a new employer seeking 100 carpenters will not draw them all from the pool of unemployed carpenters. Only a fraction will come from there: a considerable part will be drawn from other employments. This will create upward pressure on wages of other workers long before the pool of unemployed carpenters is reduced to zero. An interesting corollary of this proposition is that the creation of 1000 new jobs (for carpenters) together with the simultaneous destruction of 1000 old jobs (for carpenters) in the same broad labor market will tend to produce a rise in the wages of carpenters together with an increase in the number of unemployed (i.e., all 1000 of the fired carpenters will in the first instance be unemployed, while only, say, 300 of the newly hired ones will have been initially drawn from the ranks of the unemployed. Thus, the simultaneous creation and destruction of jobs will have caused an increase in the level of frictional unemployment).

**iv)** Considerations like the above help explain why the absorption of large pools of unemployed typically takes a long time. For example, the period from 1933-41 was one of sharply rising real income in the U.S. (except for the brief recession of 1938), yet unemployment, which started at over 20%, did not go under 10% until the U.S. became involved in World War II.

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