CAPITALISM

COMPETITION
CONFLICT
CRISES

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PART II

Real Competition

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INTERNATIONAL COMPETITION AND THE THEORY OF EXCHANGE RATES

I. INTRODUCTION

I have emphasized that the classical theory of real competition is completely different from the neoclassical theory of perfect competition. It should then come as no surprise that the theory of real international competition (i.e., the theory of real international trade) is very different from the orthodox theory of free trade.

1. Theory of trade is a critical part of debates on costs and benefits of globalization

The theory of international trade is a critical part of modern debates about the costs and benefits of the globalization of production and finance. The world is beset by widespread poverty and persistent inequality. The annual GDP per capita of the richest countries is more than $30,000, while that of the poorest countries is less than $1,000. But even the latter sum is misleading, because the distribution of income in poorer countries is appallingly skewed. According to World Bank estimates, at the beginning of the global crisis in 2008 almost half the world's population of 2.1 billion people lived on less than $2 a day and 880 million on less than $1 a day (World Bank 2008). Some developing countries have managed to advance despite these obstacles, but many others have not, and still others have slipped back particularly in the face of the current global economic crisis. The solution pressed upon the world for the last three decades by developed countries and global institutions such as the World

Trade Organization (WTO), the World Bank (WB), and the International Monetary Fund (IMF) has been to expand the reach of free trade (Agosin and Tussie 1993, 25; Rodrik 2001, 5, 10). As put by Mike Moore, the former Director General of the WTO, "the surest way to do more to help the poor is to continue to open markets" (Agosin and Tussie, 9). In practice, this has meant lowering of tariff and non-tariff barriers; reducing or eliminating subsidies; adhering to WTO rules on intellectual property rights, customs procedures, sanitary standards, treatment of foreign investors; and reforming existing tax structures and labor market rules (Rodrik 2001, 24).

2. Neoliberalism theory and practice

Neoliberalism portrays markets as self-regulating social structures that optimally serve all economic needs, efficiently utilize all economic resources, and automatically generate full employment for all persons who truly wish to work. Poverty, unemployment, and periodic economic crises in the world are claimed to exist because markets have been constrained by labor unions, the state, and a host of social practices rooted in culture and history. Overcoming poverty therefore requires creating "market-friendly" social structures in the poorer countries and strengthening existing ones in the richer countries. This involves curtailing union strength so that employers can hire and fire whom they choose; privatizing state enterprises so that their workers will fall under the purview of domestic capital; and opening up domestic markets to foreign capital and foreign goods (Friedman 2002). The self-proclaimed task of international institutions is to oversee this process for the good of the world, and particularly for the good of the poor.[1]

Neoliberal globalization became a general policy during the 1980s and gathered force in the 1990s. Yet in most countries, this latter period was associated with increased poverty and hunger (UNDP 2003, 5–8, 40). Of the fifty countries with the lowest per capita GDP in 1990, twenty-three suffered declines, while the other twenty-seven grew so modestly that it would take them almost eighty years just to achieve the level of Greece, the poorest member of the European Union before it itself went into decline in the current crisis (Friedman 2002, 1). In Latin America and the Caribbean, GDP per capita grew by a total of 75% in the two decades from 1960 to 80, and only 7% in the subsequent two decades under neoliberalism. In Africa, the first period yielded a total growth of 34%, while in the second per capita GDP fell by 15% (Weisbrot 2002, 1). Only certain Asian countries escaped this pattern, and they did so by channeling the market mechanism rather than by following its dictates. Finally, international inequality also rose in the two decades of neoliberalism: in 1980 the richest countries had median incomes 77 times as great as the poorest, but by 1999 this tremendous inequality had increased to 122: 1 (Weller and Hersh 2002, 1).

[1] In reality, the WTO "is an institution that enables countries to bargain about market access," not about poverty reduction. Indeed, its actual agenda was "shaped in response to a tug-of-war between exporters and multinational corporations in the advanced industrial countries (which have had the upper hand), on the one hand, and import-competing interests (typically, but not sole1y labor) on the other. The WTO can best be understood in this context, as the product of intense lobbying by specific exporter groups in the United States or Europe or of specific compromises between such groups and other domestic groups" (Rodrik 2001, 34).

3. Proponents of neoliberalism

It should be said that the debate about globalization has not generally been about the need to utilize international resources in the effort to reduce global poverty, but rather the manner in which resources should be brought to bear. Proponents of neoliberalism make a variety of arguments. They point to the indisputable fact that the rich countries are market-based economies that developed in-and-through the world market (Norberg 2003, 1). They draw on standard economic theory, pointing to "the virtual unanimity among economists, whatever their ideological position on other issues, that international free trade is in the best interests of trading countries and of the world" (Friedman and Friedman 2004, 1). Such sentiments are widespread among orthodox economists (Bhagwati 2002, 3–4; Winters, McCulloch, and McKay 2004, 72, 78, 106). They cite empirical evidence to the effect that global poverty has been reduced since the 1990s and that trade liberalization reduces poverty by fostering growth (Winters, McCulloch, and McKay 2004, 106–107).[2] And they argue that if some developing countries have not done as well as they should, it is largely because they have failed to implement sufficiently market-friendly policies (Norberg 2003, 2).

4. Critics of neoliberalism

Critics of neoliberalism dispute all of these claims. They note that rich countries, from the old rich of the West to the new rich of Asia, relied heavily on trade protectionism and state intervention as they developed and that they continue to do so even now (Agosin and Tussie 1993; Rodrik 2001; Chang 2002a). For instance, as far back as the fourteenth and fifteenth centuries, Britain promoted its leading industry, which was the manufacture of woolen goods, by taxing the exports of raw wool to its competitors and by trying to attract away their workers. In the heyday of its development from the early 1700s to the mid-1800s, it used trade and industrial policies similar to those subsequently used by Japan in the late nineteenth and twentieth centuries, and by Korea in the post–World War II period. It was only when Britain was already the leader of the developed world that it began to champion free trade. This point was not lost on its rivals, such as Germany and the United States. Prominent thinkers in the latter countries argued instead for protection of newly rising industries. Indeed, even as Britain was preaching free trade after 1860, the United States "was literally the most heavily protected economy in the world" and remained that way until the end of the World War II. In doing so, "the Americans knew exactly what the game was. They knew that Britain reached the top through protection and subsidies and therefore that they needed to do the same if they were going to get anywhere. . . . Criticizing the British preaching of free trade to his country, Ulysses Grant, the Civil War hero and the US president between 1868–1876, retorted that 'within 200 years, when America has gotten out of protection all that it can offer, it too will adopt free trade"' (Chang 2002b). And this, indeed, is exactly what happened.

Similar stories of protectionism and state intervention can be told for most of the rest of the developed world, including Germany, Sweden, Japan, and South Korea.

[2] Their major survey also notes that "there is . . . a surprising number of gaps in our knowledge about trade liberalization and poverty" (Winters, McCulloch, and McKay 2004, 107).

Countries like the Netherlands and Switzerland that adopted free trade in the late eighteenth century did so because they were already leading competitors in the world market. Even here, "the Netherlands deployed an impressive range of interventionist measures up till the 17th century in order to build up its maritime and commercial supremacy . . . and Switzerland and the Netherlands refused to introduce a patent law despite international pressure until 1907 and 1912, respectively, [so that they were free to appropriate] technologies from abroad" (Chang 2002b). This prior history of globalization is not just a matter of protectionism and state support as a means toward development in the West. There are also the small matters of colonization, force, pillage, slavery, mass slaughter of native peoples, and the deliberate destruction of the livelihoods of potential competitors. "Globalization was brought to many at the 'point of a gun' and many were 'globalized' literally kicking and screaming" (Milanovic 2003, 5–6). Gunboat diplomacy of the West was central in its treatment of Japan, Tunisia, Egypt, Zanzibar, and China, among others. Millions suffered in slavery and near slavery on plantations all across the world. According to recent conservative estimates, from 1865 to 1930 the "Dutch East Indies company . . . pillaged . . . between 7.4 and 10.3 percent of Indonesia's national income per year" (6). Many other examples of this sort can be adduced.

Modern growth is also not tied to free trade. Higher manufacturing growth rates have been typically associated with higher export growth rates (mostly in countries where export and import shares in GDP grew), but there is no statistical relation between either of these growth rates and degree of trade restrictions. Rather, almost all of successful export-oriented growth has come with selective trade and industrialization policies. In this regard, stable exchange rates and national price levels seem to be considerably more important than import policy in producing successful export-oriented growth (Agosin and Tussie 1993, 26, 30, 31). Conversely, there "are no examples of countries that have achieved strong growth rates of output and exports following whole-sale liberalization policies" (26; Rodrik 2001, 7). Japan, South Korea, and Taiwan are the classic cases of successful development through the application of "highly-selective trade policies." On the other hand, Chile (1974–1979), Mexico (1985–1988), and Argentina (1991) did follow wholesale liberalization, which not only wiped out weak sectors but also potentially strong ones, often at great social cost over a long period of time. Chile's economy grew at less than 1% per capita from 1973 to 1989. Mexico suffered similar setbacks and slowdowns. And Argentina, which was lauded as being a good 'globalizer' as recently as 2002 (Milanovic 2003, 30n29) ended up mired in deep crisis from which it recovered precisely by not following the rules. What is true is that economic growth is correlated with reductions in poverty in countries where the distribution of income remained stable. Unfortunately, income distribution does not generally remain stable in the developing world so growth does not necessarily produce poverty reduction. On the other hand, poverty reduction is generally good for growth. Thus, the high correlation between growth and poverty reduction does not tell us the causation, and certainly does not guarantee that the former will produce the latter (Rodrik 2001, 12).

Right from the start, there was considerable evidence that financial liberalization "leaves the real exchange rate at the mercy of fickle short-term capital movements" so that "even small changes in the direction of trade and capital flows can produce large swings in the real exchange rates." It also ties the domestic interest rate to that

in international capital markets, which makes it difficult to use it as an internal developmental policy variable (Rodrik 2001, 23). And, of course, the current global crisis, whose roots lie in the global financialization that was part and parcel of neoliberal policies, has left a trail of economic devastation in its path.

Critics of modern globalization conclude that the trade liberalization imposed on developing countries has actually led to slower growth, greater inequality, a rise in global poverty, and recurrent financial and economic crises. They fault the WTO, IMF, and World Bank for their cruel and inept actions in the face of such miseries (Friedman 2002, 3–4; Stiglitz 2002, 1; McCartney 2004). Such sentiments have begun to show up even in the principal agencies pushing for the dominant agenda. Stiglitz's (2002) damning critique of WTO and IMF policies continues to reverberate throughout the world. And eventually even the IMF itself had to grudging concede that, contrary to the rosy predictions of its theoretical models, a systematic examination the empirical evidence leads to the "sobering" conclusion that "there is no proof in the data that financial globalization has benefited growth" in developing countries (Prasad, Rogoff, Wei, and Ayhan Kose 2002, 5–6).

5. Debate appears to be about perfect versus imperfect competition

Finally, the critics generally argue that orthodox free trade theory on which neoliberalism is premised is irrelevant because free competition does not prevail even in the rich countries, let alone the poor ones. I have previously argued (chapters 7–8) that this last point is a standard trope in most heterodox arguments[3] because they accept that competition is synonymous with perfect competition and are thereby forced to anchor their own arguments on the absence of competition (i.e., in imperfect competition and monopoly power).

6. Real competition does not imply comparative costs: Resituating the debate

The purpose of this chapter is to demonstrate the conventional (Ricardian) theory of free trade is wrong on its own presupposed grounds of international competition precisely because real competition is very different from perfect competition. From this point of view, it is not the real world that is "imperfect" because it fails to live up to conventional theory. Rather, standard theory is inadequate to the world it purports to explain. Indeed, from the perspective of the classical theory of "competitive advantage," globalization has been working as would be expected—which is to say that it generally favors the developed over the developing and the rich over the poor.

II. THE THEORETICAL FOUNDATIONS OF CONVENTIONAL TRADE POLICY

1. Conventional free trade theory

Conventional economic theory concludes that trade and financial liberalization will lead to increased trade, accelerated economic growth, more rapid technological

[3] Emmanuel points out that the standard theory of comparative costs is accepted as a valid description of free trade even "by Marxist or would-be Marxist economists" (Emmanuel 1972, 275).

change, and a vastly improved allocation of national resources away from inefficient import-substitutes toward more efficient exportable goods—all conclusions being derived from the underlying structure of neoclassical theory. It admits that such processes might initially give rise to negative effects such as increased unemployment in particular sectors. But any such negative consequences are viewed as strictly temporary, to be addressed by appropriate social policies until the benefits of free trade begin to take hold. From a policy point of view, this means that the best path to economic development involves opening up the country to the world market: the elimination of trade protection, the opening up of financial markets, and the privatization of state enterprises.

2. Two crucial premises: Comparative costs and full employment

This powerful set of claims is based on two crucial premises: (1) the premise that free trade is regulated by the principle of comparative costs; and (2) the premise that free competition leads to full employment in every nation.

3. Comparative costs

The principle of comparative costs is so familiar that it has come to be seen as a truism. It is most often presented in the form of the proposition that a "nation" would always stand to gain from trade if it were to export some portion of the goods it could produce comparatively more cheaply at home, in exchange for those it could get comparatively more cheaply abroad. Hence, a nation is enjoined to focus on producing and exporting goods which are comparatively cheaper at home. Implicit in this presentation is the claim that the market will then ensure that exports will be exchanged for an equivalent amount of imports, *so that trade will be balanced* (Dernburg 1989, 3). Comparative costs are said to be relevant here, not the absolute costs. It should be said that the term "cost" in the Ricardian literature refers to prices of production (i.e., cost-based competitive prices). Neoclassical theory builds the normal profit rate into average costs so that it represents a price of production (chapter 7, section I). On the other hand, Smith and Marx distinguish between unit cost (unit wages, materials, and depreciation) and price of production, since no capital is guaranteed a normal rate of profit. This becomes important when we turn to the international expression of real competition in section V because then the price-leader, the regulating capital, is the one with the lowest unit costs and we are forced to distinguish between prices and costs. Given the widespread use of terms such as comparative and absolute costs, I can only try to remind the reader that in the international trade literature it refers to the price of production.

A normative proposition that trade should be aligned with comparative cost (-based prices) has little value unless it can be shown that free trade among market economies operates to actually bring it about. After all, in the world market it is not "nations" which barter some goods for others,[4] but rather myriad firms in different countries who buy and sell goods for money, all with the aim of earning profits on the

[4] It is astonishing how easily even otherwise skeptical writers slide from the idea of how trade actually operates to how trade "should" operate. A standard example of this tendency is Magee's (1980,

export and import of an ever-shifting variety of commodities. Therefore, when (if) conventional trade theory seeks to appear more realistic, it moves to a second stage in the argument in which a quite different, positive claim, is substituted for the previous normative one. Here it is argued that free trade will always move the terms of trade of a nation to the point which equates the values of exports and imports. Hence, even when the actual agents of international trade are multitudes of profit-seeking firms, the end result is the same as if each nation directly barters a particular quantity of exports for an equivalent value of imports (Dornbusch 1988, 3). Since this applies equally to advanced and developing economies, no nation need fear trade due to some perceived lack of international competitiveness. In the end, free trade will make each nation equally competitive in the world market (Arndt and Richardson 1987, 12). In order to underpin this transition from a normative proposition about what nations should do to a positive one about what free trade will do, it is necessary to claim that the terms of trade will fall whenever a country runs a trade deficit and that the trade deficit will diminish when terms of trade fall—with the opposite in the case of a trade surplus.

4. Full employment

Finally, in order to complete the standard argument on the benefits of free trade, it is also necessary to assume that full employment is the norm in countries with competitive markets. Without this additional assumption, even automatically self-balancing trade would not necessarily lead to gains from trade for the nation as a whole. After all, who is to say that balanced trade constitutes a "gain" from trade if that outcome is achieved at the expense of sustained job losses?

The theory of comparative advantage lies downstream of the theory of comparative costs (prices). Since these comparative costs and comparative advantage are frequently confused, it is worth dwelling on their difference. We have noted that the principle of comparative costs claims that the terms of trade of every nation will automatically adjust so as to balance international trade. In such a process, each nation will

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ch. 2) presentation of a Ricardian example of initial absolute advantage, in which each country produces two commodities but one country (the United States) can produce both more cheaply than the other (Canada). Ricardo himself notes that in this case the more efficient country would enjoy an initial balance of trade surplus and the less efficient one a balance of trade deficit. This is because Canadian *consumers* will gain by buying the cheaper US products, and US *firms* will gain by exporting them. Ricardo then claims that the trade imbalances will change the real exchange rate in such a way as to raise the foreign prices of US goods and lower the foreign prices of Canadian goods, until at some point the two nations each have a cost advantage in one good. The motivations of consumers and firms remain the same throughout, but the US absolute cost advantage and the corresponding Canadian absolute cost disadvantage are transformed into comparative cost advantages for both countries, in such a way as to eventually balance their trade. Magee jumps all of this and simply asserts that "one of Ricardo's important contributions was to debunk the myth of absolute advantage; that is, the notion that the United States *should* produce both products *and not engage in international trade*" because "it" can get both products more cheaply at home. From there he moves quickly to the claim that US consumers should engage in international trade, which he now presents as a form of barter run based on comparative costs (Magee 1980, 19, emphasis added). All of this from an author who previously states that the theory of comparative costs is "overrated" (xiv).

find that its cheapest goods, the ones in which it is presumed to specialize, are those in which it has the lowest relative (i.e., comparative) cost. For example, if trade were opened between nations with equal wages but great disparities in technology, comparative cost theory would say that even if one nation was absolutely more efficient in producing all goods, it would nonetheless end up with lower international prices only in those goods in which it was relatively (comparatively) most advanced. Conversely, the absolutely less efficient nation would nonetheless end up with lower prices in those goods in which it was comparatively least backward. Hence, it is comparative efficiency, not absolute, which would ultimately rule free trade in this case. On the dual assumptions that trade is ruled by comparative costs and that full employment always obtains, the Hecksher–Ohlin–Samuelson (HOS) model of comparative advantage claims that differences in national comparative costs are rooted in differences in national "endowments" of land, labor, and capital. As always, the argument proceeds under the usual assumption of "perfect competition, international identity of production functions and factors, nonreversibility of factor intensities, international similarity of preferences, [and] the constant returns-to-scale" (Johnson 1970, 10–11). Two widely touted conclusions emerge. First, that within a system of free trade, nations with capital-intensive factor endowments will have lower comparative costs in capital-intensive goods. Hence, they will have a "comparative advantage" in the production of such goods and will tend to specialize in them. And second, that international trade by itself, without any need for direct flows of labor and capital, will tend to equalize real wages and profit rates across countries (the factor price equalization theorem).

5. Summary of standard trade theory

In summary, three propositions are essential to the whole corpus of standard trade theory: (1) the terms of trade fall when a nation runs a trade deficit; (2) the trade balance improves when the terms of trade fall; and (3) there is no overall job loss generated by any of these adjustments. All of these mechanisms are assumed to operate over some period short enough to be socially relevant. The trouble is that each of these three foundational claims of standard trade theory has been widely criticized for its theoretical and empirical deficiencies. We will consider each proposition in turn, in reverse order, because this is the order in which they are best known.

6. Problems with standard trade theory

Let us begin with the claim that full employment is a natural consequence of competitive markets. The International Labor Organization (ILO) reports that as much as one-third of the world's workforce of three billion people is unemployed or underemployed (ILO 2001, 1). Even in the developed world prior to the current crisis, the unemployment rate ranged from 3% to 25% across countries. Matters are much worse, of course, in the developing world, where there were 1.3 billion unemployed or underemployed people at the start of the twenty-first century, many of them with no prospects of reasonable employment in their lifetime. It does not take much reflection to recognize the linkages between persistent unemployment and

intractable poverty. Given such patterns, it is hardly surprising that there remain a significant body of analysts who argue that there is no automatic tendency for full employment even in the advanced world. Indeed, this has long been the foundation of Keynesian and Kaleckian thinking.

The claim that a fall in the terms of trade will improve the balance of trade, at least after some initial negative effect called J-curve (Isard 1995, 95) is equally problematic. This proposition lies at the root of the famous "elasticities problem," which has long been the subject of great controversy. The difficulty lies in the fact that a fall in the terms of trade, which implies a cheapening of exports relative to imports, has two contradictory effects. A lower relative export price implies that each unit of exports earns less for the country. But since the exports are thereby cheaper to foreigners, the quantity of exports should rise. This means that the value of exports could fall, stay the same, or rise, depending on the relative strengths of two effects. The obverse would apply to imports. Thus, the overall response of the balance of trade to a fall in the terms of trade would depend on the combination of the two sets of responses (i.e., on the respective price elasticities of exports and imports).

We come finally to the most important claim of all, namely that the terms of trade automatically move to eliminate trade imbalances. As noted earlier, this hypothesis requires that terms of trade continue to fall in the face of a trade deficit and continue to rise in the face of a trade surplus, until "trade will be balanced so that the value of exports equals the value of imports" (Dernburg 1989, 3). To put it another way, it says that this particular real exchange rate will adjust to make all freely trading nations *equally competitive, regardless of the differences in their levels of development or of technology*. At an empirical level, this leads to the expectation that "on average, over a decade or so, ebbs and flows of competitive 'advantage' would appear random over time and across economies" (Arndt and Richardson 1987, 12).

This proposition has never been empirically true: not in the developing world, not in the developed world, not under fixed exchange rates, not under flexible exchange rates. On the contrary, persistent imbalances are the *sine qua non* of international trade. This will come as no surprise to those familiar with the history of developing countries. *But it is equally true in the developed world*. For instance, for most of the postwar period the United States has run a trade deficit, and Japan has enjoyed a trade surplus (Arndt and Richardson 1987, 12). Similar patterns hold for most other OECD countries (see section VI of the present chapter).

Since the HOS theory rests on the assumption of comparative costs, it is not surprising that it too has had grave difficulties at an empirical level (Johnson 1970, 13–18). In addition to the empirical difficulties it inherits from the theory of comparative costs, it has the further problems that it fails to correctly predict trade patterns about half of the time, that technologies differ markedly across countries, and that real wages remain persistently unequal even across developed countries. As Magee (1980, xiv) puts it, the "history of postwar international trade theory has been one of attempting to patch up either the Ricardo [comparative costs] or Hecksher–Ohlin model to fit the facts as we know them." It is acknowledged among experts that this persistent failure of the most fundamental propositions of standard trade theory has undermined confidence in its whole structure (Arndt and Richardson 1987, 12).

III. REACTIONS TO THE PROBLEMS OF STANDARD TRADE THEORY

In light of the many deficiencies of the standard theory, the natural question is: Where does the theory goes wrong and how should we correct for that? Two general approaches are widespread, and I address them here. But in the next section I will go back to the root of the problem, which is Ricardo's derivation of the principle of comparative cost. This will enable the development of an alternate theory of international trade based on the classical notion of absolute costs which has the great advantage of being consistent with the facts.

1. Reaction 1 to problems of standard theory: Slow adjustment

The first type of reaction to the problems of standard theory focuses on the fact that the basic predictions of the theory of comparative costs and/or Purchasing Power Parity (PPP) are meant to hold over the long run. The trouble is that it might take a data span of seventy years or longer to distinguish between a stationary real exchange rate and a path-dependent one generated by a unit root process (Froot and Rogoff 1995, 1657, 1662; Rogoff 1996, 647). Keynes's pithy phrase about the long run comes quite naturally to mind here. A time horizon such as this leaves considerable room for deviations from the basic principles, and economists have happily supplied a host of short-run models to fill the gap (Isard 1995; Stein 1995; Harvey 1996). Unfortunately these models tend to contradict one another, not to mention the reality they claim to explain. Even from the point of view of proponents of the standard theory, the "evaluation of ... [these] contemporary models ... shows why economists have been so disappointed in their ability to explain the determination of exchange rates and capital flows" (Stein 1995, 182). The difficulties of the standard theory have become so acute that "neoclassical economists have expressed increasing frustration over their failure to explain exchange rate movements. ... Despite the fact that this is one of the most well-researched fields in the discipline, not a single model or theory has tested well. The results have been so dismal that mainstream economists readily admit their failure" (Harvey 1996, 567). Nonetheless, "the notion of comparative advantage continues to dominate thinking among economists" (Milberg 1994, 224). Yet these failed models "continue to be offered as the dominant explanation of ... exchange rate determination [even though] most scholars are aware of the deficiencies of these models" (Stein 1995, 185). Worst of all, these same models continue to have a major influence on economic policy, having long provided the underpinning for the policies of the IMF and the World Bank (Frenkel and Khan 1993).

2. Reaction 2 to problems of standard theory: Introduce imperfections

The other major reaction to the empirical troubles of standard theory has been to modify one or more of its assumptions concerning perfect competition, factor mobility, and returns to scale. For instance, the New Trade Theory approach assumes that the crucial weakness of standard theory lies in the fact that actual competition, indeed the actual world itself, is "imperfect." It therefore situates itself within the problematic of "imperfect competition" and seeks to fill the gap between theory and the empirical evidence by incorporating oligopoly, increasing returns to scale, and various strategic

factors into the standard analysis (Milberg 1993, 1). New Trade Theory shares the standard view that trade openness is generally good but admits that it is not always so. Therefore, the focus shifts to identifying particular conditions under which trade can produce real gains and act as an engine of growth. The task is to explain why, in contradistinction to standard theory, "most trade occurred between countries with similar resource endowments; was intra-industry in character; was carried on primarily in intermediate as opposed to final goods, in the presence of [apparently] monopolistic market conditions; and took place without significant reallocation of resources or income distribution effects" (UNDP 2003, ch. 2). In order to explain these phenomena, increasing returns to scale and imperfect competition are introduced into the traditional HOS framework.[5] The aim is to make the principal of comparative advantage consistent with specialization in goods rather than specialization in whole industries. Thus, countries might end up exporting a particular type of automobile while importing another type of automobile, so that its international trade would be intra-industry. Similarly, economies of scale in the face of a larger market could potentially overturn the HOS prediction that free trade would serve to equalize international factor prices (real wages and profit rates). In addition, the composition of trade, as opposed to its mere volume, becomes important, since it may lead to significant effects such as differential elasticities of demand (the Prebisch–Singer thesis)[6] or differential transfers of technology. Finally, differences in knowledge (which includes technology) also modify the standard results. Once the notion of "factor endowment" is expanded to include accumulated and/or institutionalized human knowledge, this changes the predicted patterns of comparative advantage, benefits of trade, and international rates of growth (Romer 1987; Lucas 1993). All of these give rise to a set of possible exceptions to the standard results, which in turn provide some (limited) room for state intervention in certain strategic sectors and certain strategic activities such as R&D (UNDP 2003, ch. 2). But "the models involved in the new trade theory, even with a few factors, are extremely complicated in terms of their outcomes—potentially generating multiple equilibria and complex patterns of adjustment to or around them" (Deraniyagala and Fine 2000, 11). So in the end the theory provides "few unambiguous conclusions" (4). I would argue that these difficulties are rooted in the Ricardian principle of comparative cost upon which these models are founded. So it behooves us to return to foundations.

[5] For instance, money wages may be sticky, and even if they do adjust partially downward in the face of a trade deficit, this will worsen income inequality, may lead to social turmoil (Milberg 2002, 242), and will worsen any problems of excess capacity.

[6] The Prebisch–Singer thesis (Prebisch 1950; Singer 1950) posits three things. First, that free trade leads developing countries to specialize in primary goods and developed countries to specialize in manufactured goods. Second, that primary goods have low elasticity of demand, and manufactured goods have high elasticities of demand. Third, product and labor markets are imperfectly competitive in the center, but highly competitive in the periphery. Thus, producers in the center are able to maintain high prices and workers are able to reap the benefits of technological change through rising wages; while in the periphery firms face declining prices in the face of competition from other primary producers and workers face stagnant or declining wages in the face of large pools of unemployed labor. Therefore, the terms of trade of the developing countries deteriorate over the long run, which undermines the development process.

IV. RICARDO'S PRINCIPLE OF COMPARATIVE COST

1. Real competition

In real competition within a nation, firms constantly seek to cut their costs in order to be able to cut their prices and displace their competitors. There are no guarantees in this process, and failure is an ever-present prospect. Firms with lower operating costs (unit wages, materials, and depreciation) tend to emerge more often as winners while those with higher costs are more likely to end up as losers. This is the central selection mechanism of capitalist competition. Adam Smith extends this principle to the analysis of international trade, which implies that capitals located in nations with more efficient production and/or lower wages are likely to be more successful in the international arena than those with the opposite conditions of production. In other words, the principle of *absolute cost advantage*[7] applies equally well to competition within a nation as it does to competition between capitals in different nations, regardless of whether the absolute cheapness of the products involved is determined by "natural or acquired" advantages (Allen 1967, 53–56; Dosi, Soete, and Pavitt 1990, 29–30; Shaikh 1995, 6667). Smith emphasizes that the key factor in the employment of capital is the lure of profit: "private profit is the sole motive which determines the owner of any capital to employ it either in agriculture, in manufactures, or in some particular branch of the wholesale or retail trade" (Smith 1973, 474). This applies as much to production destined for domestic use as it does for that destined for foreign use. The point is that international trade is conducted by profit-driven exporters and importers, not by "nations" (Emmanuel 1972, 240).

2. Ricardo also begins from profit-seeking firms

Ricardo understood this full well. Like Smith, he aims to explain how national trade patterns arise from the actions of individual profit-seeking capitals in different countries. Indeed, Ricardo even begins from a Smithian vantage point. He opens his argument by considering two nations, England and Portugal. Portuguese capitals are assumed to be more developed than the English (an inside joke, since Ricardo was an Englishman of Portuguese descent) so they are initially able to out-compete English capitals in internationally traded goods. In national terms, the greater efficiency of Portuguese capitals initially makes Portugal a net exporter and England a net importer, so that the former has a trade surplus and the latter a trade deficit.

3. Ricardo on macroeconomic consequences of unbalanced trade

Ricardo now considers the macroeconomic consequences of an imbalance in international trade. Since Portuguese capitals are more efficient, Portugal's export earnings will tend to exceed its imports purchases leading, to a net inflow of funds into Portugal so that *its money supply will rise*. The opposite would hold for England, whose capitals are less efficient so that its money supply will fall. Ricardo was a proponent

[7] Absolute cost can be assessed by comparing all methods of production of a given commodity in one currency zone, which is in effect the principle used to analyze competition within a country (Shaikh 1980c, 232n3).

of the Quantity Theory of Money (see chapter 5, section III.1). From his theoretical perspective, an increase in the Portuguese money supply would tend to raise Portuguese prices and costs, while the decrease in the English money supply would tend to lower English prices and costs. The relative rise in the costs of Portuguese capitals would erode their competitive advantage and reduce Portugal's trade surplus. The corresponding relative fall in the costs of English capitals would lessen their general disadvantage and diminish England's trade deficit. Therefore, Portugal's initial cost advantage will be progressively undermined by the macroeconomic consequences of its successes, while England's initial disadvantage is progressively mitigated by the consequences of its failures. As this proceeds, an increasing number of Portuguese capitals will slip into the loser's column while an increasing number of English capitals will turn into winners. Ricardo notes that this process must continue as long as trade is unbalanced, for it is the trade imbalance which induces the money flows between nations. Hence, if they stay the course, both countries will arrive at a point of balanced trade. In other words, both countries will end up being *equally competitive in the international arena regardless of their continued differences in efficiency*. The direct implication is that there is no need for a less developed country to modernize if they just put their trust in free trade and wait for it to do its work (Shaikh 1980c, 204). If one adds in the assumption of automatic full employment, as neoclassical theory does, then even any potential adjustment problems disappear: workers displaced in the losing sectors simply find jobs in the winning sectors. One can see why this story has become the mantra of neoliberalism.

4. Fixed versus flexible exchange rates

Ricardo himself assumed that exchange rates were fixed between Portugal and England (in his case because each country was assumed to peg its currency to gold). But his argument applies equally well to flexible exchange rates (Emmanuel 1972, 240–243). The initial Portuguese trade surplus implies that Portuguese exporters are accumulating more English pounds through their exports than their compatriots need to buy English goods. The resulting excess supply of English currency on the foreign exchange market will drive down the value of the pound relative to that of the Portuguese escudo. The currency of the trade surplus country (Portugal) will appreciate which will make Portuguese goods more expensive in England and hence erode the Portuguese trade surplus. The opposite will take place in England. These are the same outcomes as with the case of fixed exchange rates: under fixed exchange rates changes in national price levels do the work, while under flexible exchange rates changes in exchange rates bring about the same result. In either case, the terms of trade, the ratio of export prices to import prices in common currency, will rise in the surplus country and fall in the deficit one until the balance of trade and hence the balance of payments goes to zero.

5. Transformation of rule of absolute costs to rule of comparative costs

In order to bring out of the stark logic of his argument, Ricardo begins by assuming that Portuguese capitals initially have lower cost-based prices in all commodities so that they dominate both English and Portuguese markets. But then, as money flows

into Portugal from England, Portuguese costs and prices rise and English costs and prices fall. We can imagine that as Portuguese goods become progressively more expensive and English goods progressively cheaper, the Portuguese commodity with the smallest advantage over its English counterpart will be the first to fall from the winner's column to the loser's. From the English point of view, this will be the commodity with the smallest disadvantage. But unless trade becomes balanced, the process will continue and the Portuguese commodity with the second smallest advantage (the English one with the second smallest disadvantage) will switch columns, and so on. All of this obtains through the actions and reactions of individual profit-seeking producers in the two countries.

6. Ricardo's shift from trade undertaken by capitals to trade undertaken by nations

When the Ricardian process comes to rest it will appear *as if* "Portugal" had chosen to specialize in producing the goods in which it had a "comparative cost advantage," exchanging them for commodities of equal money value (since trade is balanced at the rest point) consisting of goods in which "England" had a comparative cost advantage (Ricardo 1951b, 134–136; Shaikh 1980c, 216). This makes it possible for Ricardo to jump from the argument that the behavior of individual profit-seeking firms will lead to the rule of comparative cost to the proclamation that countries should use comparative costs to determine their trade patterns: "Trade can be beneficial if the country with the all-around inferior efficiency specializes in the lines of production where its inferiority is the slightest, and the country with the all-around superior efficiency specializes in the lines of its greatest superiority" (Yeager 1966, 4).[8] In neoclassical economics, this switch in focus is greatly abetted by treating international trade as an exchange process between two individuals called England and Portugal, each of whom trades in order "gain" something. This procedure has the additional virtue of instilling the false notion that the very purpose of free trade is to benefit all nations, rather than to make profits for their businesses.

Ricardo's implicit reduction of the balance of payments to the balance of trade is extremely important to his construction. A country's balance of payments is the sum of net inflows into the country: exports minus imports (the trade balance), direct investment in the country by foreigners minus investment abroad by domestic agents, short-term capital inflows such as private or business bonds purchased by foreigners (i.e., loans made by foreigners to domestic agents) minus similar financial transactions made in foreign countries by domestic agents, and so on. Ricardo proceeds as if commodity trade flows are completely separated from financial flows, so that a trade balance is synonymous with a balance of payments. Money appears in his story as a medium of circulation, but never as financial capital. This is extremely odd from a historical point of view, since the export and import of financial capital (international borrowing and lending) is intrinsically linked to the flow of funds arising from the export and import of commodities. More important, it is equally odd from a theoretical

[8] It has been noted that Ricardo's own examples of the gains from trade are implicitly based on the assumption that savings on labor (gains) are not translated into unemployment (Emmanuel 1972, 256–257).

point of view because it *implies that money and finance are completely divorced from each other*. Both Marx and Harrod seize on this point, and we will see that their restoration of the connection between the two flows overturns a key step in Ricardo's path to his conclusion (section V).

Ricardo's argument solves three distinct problems that any theory of trade must address. First, it specifies the agents, which in Ricardo's case are quite properly identified as profit-seeking capitals regulated by the principle of lowest cost production. Second, it specifies how the actions of individual agents determine the overall balance of trade, which in Ricardo's argument comes to rest with exports equal to imports. And third, it specifies that the balance of payments is in equilibrium only when the balance of trade is zero. These points are important because we will see that a classical theory of trade solves the same three problems, yet leads to the conclusion that absolute costs determine trade and those countries with less competitive capitals will suffer chronic balances of trade deficits covered by chronic external debt—all through the workings of free trade itself. But first, we need to examine Ricardo's process in more detail.

7. Numerical example of the Ricardian adjustment

We begin with Ricardo's own example. England and Portugal each can produce two goods, cloth and wine. But since Portugal is more developed, it has lower prices of production (i.e., cost-based competitive prices). In order to emphasize that the logic is not restricted to fixed exchange rates or the gold standard, I will assume that there is a flexible exchange rate between English pounds (£) and Portuguese escudos (represented by € which is the current symbol for the euro). Portugal's initial exchange rate is e = 1£/€, and all international prices are measured in English pounds. Given that the English pound is the international benchmark, Portugal's international prices will change with the exchange rate; whereas, England's international prices will be remain the same as its domestic ones. Lastly, at each exchange rate the lowest price for any commodity, its *regulating price*, will be indicated in bold. Table 11.1 depicts the initial situation in which Portuguese capitals have the absolute cost advantage in both goods.

In the preceding situation, Portuguese capitals will be able to sell more cheaply at home and abroad. So Portugal will run a trade surplus as its customers avoid the more expensive English goods, and England will run a trade deficit as its customers seek out the cheaper Portuguese goods. According to Ricardo's logic, the Portuguese exchange rate (e) will appreciate in the face of Portugal's trade surplus (England's exchange rate 1/e will depreciate in the face of its trade deficit). In the initial situation, Portuguese capital has an 11% price advantage in cloth [(£90 – £100) /£90] and a 50% price advantage in wine [(£80 – £120) /£80]. It is then clear that the exchange rate must rise by more than 11% if English capital is to get back into the game

Table 11.1 An Initial Situation of Absolute Advantage

	Portugal (domestic prices)	*Exchange Rate* (e)	*Portugal (international prices)*	*England*
Cloth	€90	1£/€	**£90**	£100
Wine	€80	1£/€	**£80**	£120

by gaining the price advantage in cloth. On the other hand, it cannot rise by more than 50% because then the absolute price advantage would shift entirely to England, in which case Portugal would have a trade deficit and its exchange rate would fall back. It follows that only an exchange rate which permits each country to have one export good is feasible, because it is only in that range that trade could be balanced and the exchange rate remain stable. In the present example, this means an exchange rate which is higher than the initial one by between 10% and 33.33%, that is, a new exchange rate between e = 1.11£/€ and e = 1.50£/€. Notice that the initial point is not important because the feasible exchange rate must always lie somewhere between the domestic-currency comparative price ratios in cloth £100/€90 = 1.11 £/€ and in wine £120/€80 = 1.5 £/€. *That is Ricardo's central point.* Table 11.2 depicts the situation with an exchange ratee = 1.33 £/€, which happens to lie within the feasible range, thereby giving English capital the price advantage in cloth and Portuguese capital that in wine.

In the opposite case of fixed exchange rates, Ricardo's argument implies that the inflow of funds into Portugal due to its initial trade surplus will increase its money supply and raise its price level, while the reverse will occur in England. These price level movements will erode the advantages of Portuguese capitals and reduce disadvantages of English ones, until at some point each country has one good with a lower price. It should be obvious that in order for this latter outcome to obtain, Portugal's price level must rise by more than 11%, and by less than 50%, relative to England's—the very same limits as in the case of a flexible exchange rate under given national price levels. Table 11.3 depicts an outcome of this type in which Portuguese prices have risen by 15% and English prices fallen by 14%, so that the relative price level of Portugal has risen by 33.33%. The particular numbers have been picked to give us the same Portuguese comparative prices as before: in cloth, £103.5/£86 = £120/£100 = 1.20 and in wine £92/£103.2 = £107/£120 = 0.89.

The direction of trade is determined by comparative price advantages, but the volume of trade depends on additional factors. Ricardo himself is not much concerned with the exact exchange rate and the quantities at which trade supposedly balances.

Table 11.2 Ricardian Adjustment through Flexible Exchange Rates

	Portugal (domestic prices)	*Exchange Rate* (e)	*Portugal (international prices)*	*England*
Cloth	€90	1.33£/€	£120	£**100**
Wine	€80	1.33£/€	£**107**	£120

Table 11.3 Ricardian Adjustment through Changes in National Price Levels

	Portugal Initial Prices	*Portuguese Final Prices (+15%)*	*Exchange Rate* (e)	*Portugal (international prices)*	*English Final Prices (–14%)*	*England*
Cloth	€90	€103.5	1£/€	£103.5	£**86.00**	£100
Wine	€80	€92	1£/€	£**92**	£103.20	£120

The conventional closure nowadays would be to say that demand for the two commodities depends on the relative price of the commodities (the neoclassical emphasis) and the level of income in each country (the Keynesian emphasis), with the parameters of the relevant functions representing the underlying preference structures of consumers and businesses in both nations. The important point is that the exchange rate and/or price level will be within the Ricardian range and that free trade will make each country competitive on a world scale (in the sense of achieving trade balance) regardless of differences in demand, income, or levels of development of the countries involved.

A key point in Ricardo's logic is that each comparative price (e.g., the £ price of cloth in Portugal relative to the £ price of cloth in England) adjusts steadily as the exchange rate and/or the national price level moves in the appropriate direction. Since the two movements are logically equivalent I will focus on the former. We notice from tables 11.1 and 11.2 that as the exchange rate rises there is a corresponding rise in the levels of Portugal's international cloth and wine prices expressed in £'s, while the levels of English prices remain the same because they are already denominated in £'s. Hence, Portuguese commodity prices rise steadily relative to their English counterparts (i.e., Portuguese comparative prices rise and the price advantage of Portuguese capitals is steadily eroded). Yet for any e $<$ 1.11 £/€ they still have an absolute advantage in both commodities so the international price ratio of cloth to wine is determined by Portugal's internal price ratio. The latter is in turn the production price ratio of cloth to wine determined by Portuguese technology and its real wage. Hence, for any e $<$ 1.1 £/€, the international relative price is regulated by Portuguese price of production. Conversely, for e $>$ 1.5 £/€, English capitals would have an absolute price advantage in both commodities and the international relative price would be determined by English costs of production. It is only in the Ricardian range of 1.11 £/€ $<$ *e* $<$ 1.5 £/€ that the international relative price is divorced from the cost structure of either country. *Hence, it is only in this range that the international price ratio can be determined by the requirement of balanced trade.* Figure 11.1 depicts this intrinsic feature in Ricardo's theory in which comparative commodity prices change smoothly but ruling international prices remain cost-bound except within the Ricardian range. In the first chart we see that the comparative prices of Portuguese to English producers change smoothly with the exchange rate, and that these are both less than one for exchange rates below 1.11 £/€ so that Portugal dominates both international industries; that in the exchange rate range 1.11 – 1.50 £/€ the Portuguese comparative price for cloth is above one (hence England's below one) while that for wine is still below one, so England now dominates cloth production while Portugal retains wine; and for exchange rates greater than 1.50 £/€, Portuguese comparative prices are both above one so that England's capitals rule both industries. In the second chart, we see that international relative prices nonetheless do not change at all when we are outside the comparative cost range. We will see that this duality arises from an inconsistency between Ricardo's exposition and his prior classical foundations. Correction of this error removes the duality. But then Ricardo's claim that free trade transforms absolute cost advantages into comparative ones is also invalidated.

Ricardo's theory of free trade is held to be a 'sacred tenet' of modern economics even by those who go on to argue that actual international trade is different because the real world fails to live up to the assumed conditions of competition (Krugman 1987, 131). However, we will see there are a few weighty exceptions to

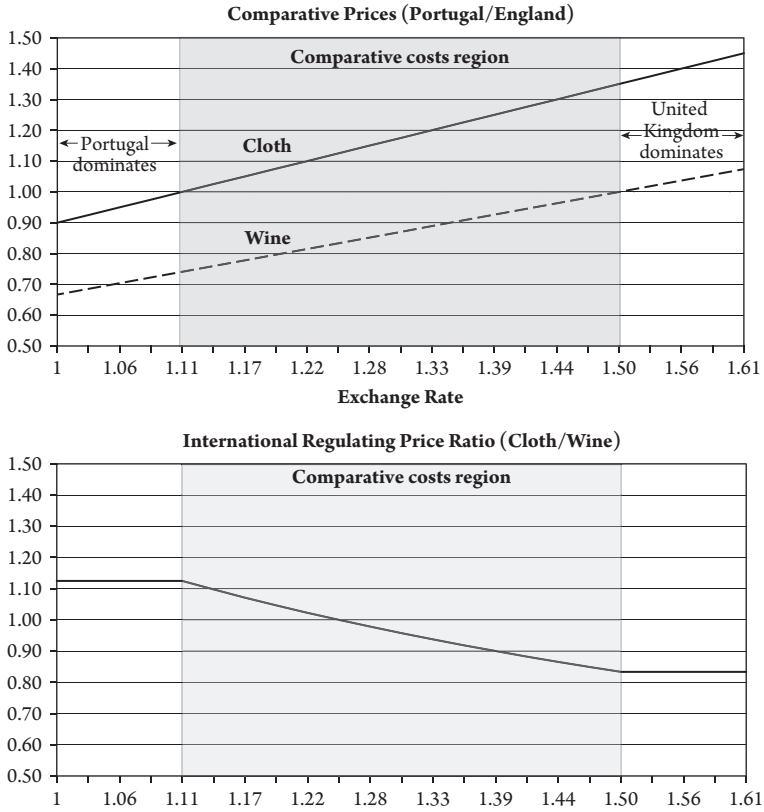

Figure 11.1 The Ricardian Duality

the imperfectionist chorus: Smith, Marx, Keynes, and Harrod. To locate a classical alternative to the standard argument, we need to return to the basic question: How does competition work on an international scale?

V. REAL COMPETITION IMPLIES ABSOLUTE COST ADVANTAGE

1. Introduction

The Ricardian argument is a story about the determination of international regulating capitals. When trade opens, Portugal and England each produce both wine and cloth, so there are two different producers for each good. Despite the fact that Portugal has the initially lower cost-based prices in both goods, the comparative costs argument says that international competition will end up selecting British firms as the regulating capitals for cloth leaving Portuguese firms with the regulating role only for wine.

2. The first difficulty: Feedback from prices to cost

Within the theory of real competition, the price-leader (regulating capital) in any industry is the one with the lowest unit operating cost, the term "cost" now defined in the proper business sense as the sum of unit wages, materials, and depreciation.

Then the first difficulty with the Ricardian argument is that changes in the *relative* international prices of goods will also affect the relative *costs* of these same goods. This is the logical extension of Sraffa's central point that prices and costs are inextricably intertwined (chapter 9, section XI). It turns out that when we allow for this feedback effect, comparative costs may not change at all in response to any changes in the real exchange rate (nominal exchange rate and/or the relative national price level), in which case Portuguese capitals remain the ones with lower comparative costs (the regulating ones) in both goods. Even if comparative costs do respond to changes in real exchange rates, they may not respond sufficiently to displace Portuguese capitals from their thrones. Worst of all for the Ricardian thesis, comparative costs may change in the "wrong" direction (i.e., they may make the absolute cost advantage of Portugal even greater). This means that even if the real exchange rate did automatically vary with the trade balance, as Ricardo supposes, comparative costs will not move in the Ricardian manner as long as real costs (real wages and productivity) are determined at the national level.

3. The second difficulty: Trade imbalances and balance of payments

The second problem with the Ricardian theory is that real exchange rates need not change at all in the face of trade imbalances. Ricardo's argument elides the distinction between the balance of payments and the balance of trade by making it seem as if changes in money supply only affect national price levels. He notes that a country with a trade surplus will incur a net inflow of funds, which means that it will have a balance of payments surplus. On the strength of the Quantity Theory of Money, he further claims that an increased supply of money leads to an increase in the price level which then would undermine the cost advantage of the country's producers. This is where Marx's argument branches off from Ricardo's. On Marx's logic, the country with a trade surplus will experience an increase of liquidity which will lower its interest rate, while the country with the trade deficit will experience a tightening of liquidity and an increase in the interest rate—all through the normal functions of capital markets. The trade-created interest rate differential will then provoke a short term (and hence relatively rapid) capital outflow from the trade surplus country to the trade deficit one. In effect, the country with a competitive advantage will enjoy a trade surplus which will enable it to be an international lender, while the country at a competitive disadvantage will suffer a trade deficit and become an international borrower. These are extremely familiar patterns in the actual history of international trade, up to the present day. As Harrod remarks, it is not possible to maintain a Ricardian separation between international trade and international finance: the two are inextricably linked through the money supply (Harrod 1957, 115). But then, with capital flows offsetting trade balances, the net effect on the balance of payments will depend on the relative magnitude of these two effects: the exchange rate may not change at all, or if it does, it may change in the "wrong" direction—that is, the exchange rate of the trade surplus country may depreciate rather than appreciate.

4. The classical theory of free trade

The argument about the feedback effects of international prices on costs leads to the conclusion that free trade will lead to persistent trade imbalances if there are structural

differences in international competitiveness, while the argument about the linkages between trade imbalances and international finance liquidity implies that persistent trade balances are compatible with balance of payments through countervailing short-term capital flows. Taken together, they give us a classical analysis of free trade which is very different from the standard one and is consistent with the empirical evidence. In what follows, I will address each of these points in turn.

5. Regulating capitals in an international context

The first issue concerns the feedback from international prices on unit costs in each industry. Once competition becomes international, producers of a particular commodity in one nation confront producers of the same commodity in other nations: industries cut across borders. As is always the case with real competition within an industry, the relevant variable is unit cost because the lowest cost determines the regulating capital and hence the regulating price of production (chapter 7).

i. Prices of production prior to trade

We begin with standard circulating-capital Sraffian price of production systems in two separate nations (A, B) producing two different goods (1, 2) and not yet involved in international trade. The notation is the same as in chapter 9, section VI. The real wage wr in each country is expressed in terms of commodity 2, which we can consider to be the consumption good, so we can replace the money wage w by $p_2 \cdot wr$. In keeping with most economic traditions, the price level $p \equiv (p_1 \cdot xr_1 + p_2 \cdot xr_2)$, where xr_1, xr_2 are reference quantities of the two commodities, is taken to be determined by macroeconomic considerations (chapters 5 and 15). Then under autarchy, we have three equations in each country (one for each industry and one for the country's given price level) in three variables (p_1, p_2, r), so each autarchic system is determinate in the levels of industry prices.

Country A	**Country B**
$p_1^A = p_2^A \cdot wr^A \cdot l_1^A + (p_1^A \cdot a_{11}^A + p_2^A \cdot a_{21}^A) \cdot (1 + r^A)$	$p_1^B = p_2^B \cdot wr^B \cdot l_1^B + (p_1^B \cdot a_{11}^B + p_2^B \cdot a_{21}^B) \cdot (1 + r^B)$
$p_2^A = p_2^A \cdot wr^A \cdot l_2^A + (p_1^A \cdot a_{12}^A + p_2^A \cdot a_{22}^A) \cdot (1 + r^A)$	$p_2^B = p_2^B \cdot wr^B \cdot l_2^B + (p_1^B \cdot a_{12}^B + p_2^B \cdot a_{22}^B) \cdot (1 + r^B)$
$p_1^A \cdot xr_1 + p_2^A \cdot xr_2 = p^A$	$p_1^B \cdot xr_1 + p_2^B \cdot xr_2 = p^B$

(11.1)

ii. Comparative costs

Once international competition opens up, each commodity will acquire a common international market price in any given currency through the usual turbulent process, subject in practice to transportation costs, tariffs, and taxes, and so on. This is the same principle as competition within an industry in a given nation. Let p_1^*, p_2^* be these international market prices expressed in some common currency. We will analyze the

forces that regulate these prices shortly, but for now it is sufficient to assume that they exist. In order for the costs of production of a given commodity to be comparable across countries, these costs must be expressed in terms of a common currency and evaluated in terms of the ruling international prices. Such a comparison is crucial because in classical logic the country with the lower cost in a particular commodity will be the regulating capital and hence the likely exporter of that commodity. Let the currency of Country A have units € and that of Country B have units £ so that the exchange rate of Country A(e) has units (£/€). Then from equation (11.1) we can write the common currency comparative unit production costs of each commodity in the two countries as:

Commodity 1 **Commodity 2**

$$\frac{uc_1^A \cdot e}{uc_1^B} = \frac{(p_2^* \cdot wr^A \cdot l_1^A + p_1^* \cdot a_{11}^A + p_2^* \cdot a_{21}^A)}{(p_2^* \cdot wr^B \cdot l_1^B + p_1^* \cdot a_{11}^B + p_2^* \cdot a_{21}^B)} \quad \frac{uc_2^A e}{uc_2^B} = \frac{(p_2^* \cdot wr^A \cdot l_2^A + p_1^* \cdot a_{12}^A + p_2^* \cdot a_{22}^A)}{(p_2^* \cdot wr^B \cdot l_2^B + p_1^* \cdot a_{12}^B + p_2^* \cdot a_{22}^B)} \tag{11.2}$$

The foregoing expressions can be simplified by noting that they depend only on the real wage and the relative international price ($p^* = p_1^*/p_2^*$).

Commodity 1 **Commodity 2**

$$\frac{uc_1^A \cdot e}{uc_1^B} = \frac{\left(wr^A \cdot l_1^A + p^* \cdot a_{11}^A + a_{21}^A\right)}{\left(wr^B \cdot l_1^B + p^* \cdot a_{11}^B + a_{21}^B\right)} \quad \frac{uc_2^A \cdot e}{uc_2^B} = \frac{\left(wr^A \cdot l_2^A + p^* \cdot a_{12}^A + a_{22}^A\right)}{\left(wr^B \cdot l_2^B + p^* \cdot a_{12}^B + a_{22}^B\right)} \tag{11.3}$$

iii. Absolute costs

We are now in a position to consider Ricardo's own starting point in which all industries in Country A (Portugal) happen to have an absolute advantage over those in Country B (England). If Portugal had the initial absolute cost advantage in both commodities, its domestic prices of production would be the ruling international ones and it would run a trade surplus. Ricardo argues that domestic price level and/or the exchange rate in Portugal would then rise, which would in turn raise the international price of both commodities. On Ricardo's own argument, so long as Portuguese capitals remain dominant the relative international price p^* will remain equal to the Portuguese production price ratio. But then from equation (11.3) the Portuguese comparative cost advantage will not change as long as real wages are given. So we run headlong into the central problem of Ricardo's story: Portugal's comparative cost advantage cannot change unless the international relative price changes, but international relative price cannot change unless Portugal loses its comparative cost advantage. Hence, Ricardo's theory falls apart even if Portugal's price level and/or exchange rate rises when it has a balance of trade surplus.

iv. Benchmark case of equal technical compositions but different efficiencies

The difficulty cannot be surmounted by assuming that money wages are sticky, for even in this case a rise in international prices would lower both Portuguese and

English real wages to the same degree. Depending on the exact constellation of coefficients, this could well reduce Portugal's relative cost and make its absolute advantage even greater. It is useful to pursue the last point in more detail by considering the benchmark case in which producers of the same commodity have equal technical proportions but different efficiencies. Suppose that labor and materials coefficients in (say) industry 1 in Country A are all proportionally smaller than the coefficients of industry 1 in Country B, for example, for some relative efficiency factor $\xi_1 < 1$, $l_1^A = \xi_1 \cdot l_1^B$, $a_{11}^A = \xi_1 \cdot a_{11}^B$ and $a_{21}^A = \xi_1 \cdot a_{21}^B$. Then from equation (11.3) the comparative costs of Portuguese to English goods in each industry would be

Commodity 1 **Commodity 2**

$$\frac{uc_1^A \cdot e}{uc_1^B} = \frac{\xi_1 \cdot \left(wr^A \cdot l_1^B + p^* \cdot a_{11}^B + a_{21}^B\right)}{\left(wr^B \cdot l_1^B + p^* \cdot a_{11}^B + a_{21}^B\right)} \qquad \frac{uc_2^A \cdot e}{uc_2^B} = \frac{\xi_2 \cdot \left(wr^A \cdot l_2^B + p^* \cdot a_{12}^B + a_{22}^B\right)}{\left(wr^B \cdot l_2^B + p^* \cdot a_{12}^B + a_{22}^B\right)} \tag{11.4}$$

v. Complete independence of comparative cost from relative prices in the benchmark case

If Portuguese real wages were the same as in England, the expressions in parentheses are the same in the numerator and denominator of each expression in equation (11.4), so that comparative cost depends only on efficiencies:

Commodity 1 **Commodity 2**

$$\frac{uc_1^A \cdot e}{uc_1^B} = \xi_1 < 1 \qquad \frac{uc_2^A \cdot e}{uc_2^B} = \xi_2 < 1 \tag{11.5}$$

In this case, *absolute advantages and disadvantages would arise solely from efficiency advantages and would be completely invariant to changes in the international relative price* (p) and even to changes in the levels of real wages (due to sticky real wage adjustments) as long as national real wages remained equal. Then the only way for English capitals to become internationally competitive would be for them to raise their efficiencies faster than their Portuguese counterparts (who, of course, will be driven to try the same). This is precisely the avenue Ricardo dismisses on the grounds that free trade would make the countries equally competitive without having to catch up in technology.

The other possibility, also dismissed as unnecessary in the Ricardian story, is that English capitals could try to keep English real wage growth lower than that in Portugal. But while technological change is a local interaction between each firm and its labor force, real wage growth is a macroeconomic phenomenon involving capital, labor, profitability, population growth, and the overall rate of technical change (see Part III, chapter 14).

vi. General case

In the general case of unequal technical compositions and unequal real wages, one can see from equation (11.3) that with given real wages in each country the comparative cost in any industry is a ratio of two linear functions of the relative price and may fall or rise with the relative price depending on the constellation of coefficients.

Moreover, the extent of any such a movement is itself limited by the relative structures of production, as is evident from the cases depicted in equations (11.4) and (11.5). The upshot of these considerations is that international competitiveness will be tied to differences in efficiency, real wages, and technical proportions, and there is nothing in free trade itself that will eliminate absolute cost advantages or disadvantages.

vii. The Smithian decomposition

The Smithian decomposition of price developed in chapter 9, section III, is particularly useful in exploring this issue. We saw that any price for the j^{th} commodity can be written as $p_j = w \cdot v_j \left(1 + \sigma_{PW_j}\right)$, where $w \cdot v_j$ is the integrated unit labor cost (vulc) and σ_{PW_j} is the integrated profit–wage ratio in industry *j*. Then for any two countries A and B the ratio of common currency integrated comparative unit labor costs for industry *j* is:

$$\frac{\text{vulc}_j^A \cdot e}{\text{vulc}_j^B} = \left(\frac{w^A \cdot e}{w^B}\right) \cdot \left(\frac{v_j^A}{v_j^B}\right) \tag{11.6}$$

This seems to offer a direct path to the Ricardian argument. If Portugal's comparative costs in both industries are less than those in England, then Portugal will have a balance of payments surplus due to its a balance of trade surplus, the money supply will rise so that with fixed exchange rates the Portuguese price level will rise. Ricardo himself supposes that real wages are tied to a standard of living that "essentially depends on the habits and customs of the people" (Ricardo 1951b, 96–97; Dobb 1973, 91–92, 152). Then the Portuguese money wage will rise and this will erode Portugal's absolute advantage and diminish its trade surplus. The process will continue as long as trade is unbalanced, so in the end trade must end up being balanced. The same effect obtains if the increase in the money supply only raises Portugal's exchange rate, since this too will raise its comparative costs and will continue do so as long as there is an imbalance in trade. In either case, it seems that free trade must lead to balanced trade.

But there is a catch here. In the case of fixed exchange rates, the rise in the Portugal's price level will raise its domestic and international prices because Portugal's prices are the regulating prices since it has an absolute advantage in both industries. Then English workers will experience the same rise in prices as Portuguese workers. It follows that nominal wages in both countries must rise to the same degree if both sets of workers are to maintain their real wages—*in which case comparative costs in equation* (11.6) *would not change at all.* If instead the Portuguese price level were to stay constant and its exchange rate were to appreciate, Portuguese nominal wages would remain constant at any given real wage. But in England, the ruling prices would rise by the full amount of the exchange rate appreciation so that English nominal wages would have to rise to the same degree as the exchange rate in order to maintain the English real wage. In terms of equation (11.6), w^A would remain constant, e would rise, and w^B would rise to the same degree, so that comparative costs would once again be unchanged.

In either case, the Ricardian error stems from a failure to take into account the effect of ruling prices on costs. This effect can be easily formalized. Let the real wage be

$wr = \frac{w}{p_c}$, where p_c is the price of some common bundle of consumption goods. Then we can write the comparative integrated real unit labor costs of commodity *j* as:

$$\frac{vulcr_j^A \cdot e}{vulcr_j^B} = \left(\frac{wr^A}{wr^B}\right) \cdot \left(\frac{v_j^A}{v_j^B}\right) \cdot \left(\frac{p_c^A \cdot e}{p_c^B}\right) \tag{11.7}$$

viii. Integrated comparative real costs

At Ricardo's level of abstraction, all goods are internationally traded (nontradable goods will be addressed later) and subject to the law of one price, which implies that any common bundle of goods will have the same price in any given currency, that is, $p_c^A \cdot e = p_c^B$. Notice that this step incorporates the effects of international prices on integrated costs, which is crucial to the classical argument. Then the common currency integrated comparative real unit labor costs of a given good in two countries depends only on relative national real wages and relative national integrated unit labor times (the latter being the inverse of integrated productivities).

$$\frac{vulcr_j^A \cdot e}{vulcr_j^B} = \left(\frac{wr^A}{wr^B}\right) \cdot \left(\frac{v_j^A}{v_j^B}\right) \tag{11.8}$$

So long as real wages are socially determined in each country, comparative cost advantages will change only if relative real wages or relative integrated productivities changes. Then Ricardo's argument has no purchase unless free trade causes one of these variables to move in such a way as to automatically balance trade. For instance, even if relative real wages were to rise in the more competitive country (as they have been doing in China lately), this would diminish but not necessarily overturn its cost advantages. The latter outcome would require the real wages to continue to rise until trade becomes balanced. The standard free trade story therefore implicitly requires that relative real wages be endogenously determined by the requirements for balanced trade (i.e., that the national real wages serve as market-clearing variables for international trade). Such a claim would be inconsistent with the classical notion of socially determined real wages to which even Ricardo subscribes, as well as being inconsistent with the neoclassical argument that real wages serve to clear the labor market in each country (i.e., bring about full employment). It is perfectly sensible to say that real wages may be affected by international outcomes, but it is a different thing altogether to claim that real wages will be determined by the requirements for trade balance. Hence, Smith is right and Ricardo is wrong: free trade will lead to persistent trade surpluses for countries whose capitals have lower costs and persistent trade deficits for those whose capitals have higher costs.

ix. Three possible outcomes in classical 2 x 2 case

Up to this point, it has been sufficient to assume that competition within each international industry establishes a set of international prices. We now turn to the determination of these prices. In the two-commodity two-country case, there are three possible outcomes of international competition. It may be that both regulating capitals are in Country A because both producers have the absolute cost advantage, in which case the international regulating prices will be determined by the prices of production of Country A. The opposite case would be if both regulating capitals are in Country B.

Since the two cases are symmetric, it is sufficient to analyze the first one. Production prices p_1^A, p_2^A in €'s will be determined in Country A in accordance with its real wage and general price level (see equation (11.1)), and these translate into prices $p_1^A/e, p_2^A/e$ in £'s in Country B. The money wage is $w = p_2 \cdot wr$, where wr is the real wage and p_2 is the price of the consumption good. The regulating capitals are listed in bold-type here (which therefore does not denote vectors and matrices in this case). Both industries in Country A will receive the general rate of profit, but in Country B, each industry will get a different profit rate consistent with its efficiency and its real wage in the face of international prices. This is always the case with non-regulating capitals (chapter 7, section IV).

Country A (€'s)	**Country B (£'s)**
$\mathbf{p_1^A} = \mathbf{p_2^A} \cdot \mathbf{wr^A} \cdot \mathbf{l_1^A}$	$p_1^A \cdot e = p_2^A \cdot e \cdot wr^B \cdot l_1^B$
$+(\mathbf{p_1^A} \cdot \mathbf{a_{11}^A} + \mathbf{p_2^A} \cdot \mathbf{a_{21}^A}) \cdot (\mathbf{1} + \mathbf{r^A})$	$+ (p_1^A \cdot e \cdot a_{11}^B + p_2^A \cdot e \cdot a_{21}^B) \cdot (1 + r_1^B)$
$\mathbf{p_2^A} = \mathbf{p_2^A} \cdot \mathbf{wr^A} \cdot \mathbf{1_2^A}$	$p_2^A \cdot e = p_2^A \cdot e \cdot wr^B \cdot 1_2^B$
$+ (\mathbf{p_1^A} \cdot \mathbf{a_{12}^A} + \mathbf{p_2^A} \cdot \mathbf{a_{22}^A}) \cdot (1 + \mathbf{r^A})$	$+ (p_1^A \cdot e \cdot a_{12}^B + p_2^A \cdot e \cdot a_{22}^B) \cdot (1 + r_2^B)$
$\mathbf{p_1^A} \cdot \mathbf{xr_1} + \mathbf{p_2^A} \cdot \mathbf{xr_2} = \mathbf{p^A}$	(11.9)

While the level of prices and costs in £'s in Country B depends on the exchange rate, comparative costs in the two countries do not because their elements must be expressed in common currency (say £'s) so that the exchange rate cancels out from the numerator and the denominator.

Commodity 1	**Commodity 2**
$\frac{uc_1^A \cdot e}{uc_1^B} = \frac{(p_2^A \cdot wr^A \cdot 1_1^A + p_1^A \cdot a_{11}^A + p_2^A \cdot a_{21}^A) \cdot e}{(p_2^A \cdot e \cdot wr^B \cdot 1_1^B + p_1^A \cdot e \cdot a_{11}^B + p_2^A \cdot e \cdot a_{21}^B)}$	$\frac{uc_2^A \cdot e}{uc_2^B} = \frac{(p_2^A \cdot wr^A \cdot 1_2^A + p_1^A \cdot a_{12}^A + p_2^A \cdot a_{22}^A) \cdot e}{(p_2^A \cdot e \cdot wr^B \cdot 1_2^B + p_1^A \cdot e \cdot a_{12}^B + p_2^A \cdot e \cdot a_{22}^B)}$
(11.10)	

The remaining possibility would be if each country happened to have an absolute advantage in one commodity, say commodity 1 for Country A and commodity 2 for Country B. In this case, the equalization of profit rates across regulating capitals occurs on an international scale resulting in common currency international prices of production for some given international price level. In equation set (11.11), the two regulating capitals and the given world price level listed in bold type form a determinate system of three equations in three variables (p_1^*, p_2^*, r). These same international prices will then determine distinct profit rates $\left(r_1^A, r_2^B\right)$ for the non-regulating (import-competing) capitals in each country. This reminds us that average rates of profit will not be equalized across countries even if profit rates are equalized across regulating capitals (chapter 7, figure 7.7). Note that all variables here are expressed in international currency.

Country A (in £′s)	**Country B** (£′s)
$\mathbf{p_1^*} = \mathbf{p_2^*} \cdot wr^A \cdot \mathbf{l_1^A}$	$p_1^* = p_2^* \cdot wr^B \cdot l_1^B$
$+ (\mathbf{p_1^*} \cdot \mathbf{a_{11}^A} + \mathbf{p_2^*} \cdot \mathbf{a_{21}^A}) \cdot (\mathbf{1} + \mathbf{r})$	$+ (p_1^* \cdot a_{11}^B + p_2^* \cdot a_{21}^B) \cdot (1 + r_1^B)$
$p_2^* = p_2^* \cdot wr^A \cdot 1_2^A$	$\mathbf{p_2^*} = \mathbf{p_2^*} \cdot \mathbf{wr^B} \cdot \mathbf{1_2^B}$
$+ (p_1^* \cdot a_{12}^A + p_2^* \cdot a_{22}^A) \cdot (1 + r_2^A)$	$+ (\mathbf{p_1^*} \cdot \mathbf{a_{12}^B} + \mathbf{p_2^*} \cdot \mathbf{a_{22}^B}) \cdot (\mathbf{1} + \mathbf{r})$
$\mathbf{p_1^*} \cdot \mathbf{xr_1} + \mathbf{p_2^*} \cdot \mathbf{xr_2} = \mathbf{p^*}$	(11.11)

x. The intermediate case is the general one

The intermediate case in equation (11.11) is in fact the general one. At a concrete level, Country A will export and import a multitude of commodities in relation to a multitude of trading partners whom we can lump into Country B. Then we can safely assume that each such "country" has a set of exports and a set of imports. We have already learned from Sraffa that within any given technique the profit rate and all relative prices are determined by a given real wage. In equation (11.11) the relative international price $p^* = p_1^*/p_2^*$ is now also the terms of trade of Country A (its export price relative to its import price, in common currency). The key point is that the terms of trade are pinned by national real wages and structures of production. Then it follows that the terms of trade cannot also move to endogenously balance trade. The Ricardian theory of comparative costs and automatic trade balance which is the foundation of the standard theory of international trade simply does not hold up.

xi. Tradable and nontradable goods

It is possible extend the preceding analysis to the case of a nontradable good (commodity 3). The price of this commodity will affect input costs insofar as the good enters into production and it will affect the money wage insofar as the good enters into the broader wage basket as consumption goods c_2, c_3. In the latter case, it is useful to define the average international price of consumption goods $p_c^* \equiv p_2^* \cdot c_2 + p_3^* \cdot c_3$ so that we may express the money wage as $w = wr \cdot p_c^*$. Note the given world price level p^* determines the absolute levels of individual prices, whereas the average consumption price p_c^* is determined by these same individual prices. Finally, even though a nontradable good does not directly participate in international competition, some capitals within it are local regulating capitals and subject to the same domestic investment flows as national and the regulating capitals in internationally traded goods. Hence, the price of nontradables will be regulated by the same profit rate as the regulating capitals. Non-regulating capitals, tradable or nontradable, are different since their lower profit rates are an expression of their inferiority in competition and hence of their limited value for new capital flows. This is precisely why they tend to be left out of the picture in most analyses of competition. Once ignored in theory, they tend to be forgotten altogether. Then their real existence appears to be an indication of the "imperfection" of competition when it is actually an indication of a too rapid move from the abstract to the concrete—an imperfection of the theorist rather than of the theory. As previously, all variables are expressed in international currency (£'s).

Country A	**Country B**
$\mathbf{p}_1^* = \mathbf{p}_c^{\mathrm{A}} \cdot \mathrm{wr}^{\mathbf{A}} \cdot \mathbf{l}_1^{\mathbf{A}} + \left(\mathbf{p}_1^* \cdot \mathbf{a}_{11}^{\mathbf{A}} + \mathbf{p}_2^* \cdot \mathbf{a}_{21}^{\mathbf{A}} + \mathbf{p}_3^{\mathrm{A}} \cdot \mathbf{a}_{21}^{\mathbf{A}}\right) \cdot (1 + \mathbf{r})$	$p_1^* = p_c^{\mathrm{B}} \cdot \mathrm{wr}^{\mathrm{B}} \cdot l_1^{\mathrm{B}} + \left(p_1^* \cdot a_{11}^{\mathrm{B}} + p_2^* \cdot a_{21}^{\mathrm{B}} + p_3^{\mathrm{B}} \cdot a_{21}^{\mathrm{B}}\right) \cdot (1 + r_1^{\mathrm{B}})$
$p_2^* = p_c^{\mathrm{A}} \cdot \mathrm{wr}^{\mathrm{A}} \cdot l_2^{\mathrm{A}} + \left(p_1^* \cdot a_{12}^{\mathrm{A}} + p_2^* \cdot a_{22}^{\mathrm{A}} + p_3^{\mathrm{A}} \cdot a_{32}^{\mathrm{A}}\right) \cdot (1 + r_2^{\mathrm{A}})$	$\mathbf{p}_2^* = \mathbf{p}_c^{\mathrm{B}} \cdot \mathrm{wr}^{\mathbf{B}} \cdot \mathbf{l}_2^{\mathbf{B}} + \left(\mathbf{p}_1^* \cdot \mathbf{a}_{12}^{\mathbf{B}} + \mathbf{p}_2^* \cdot \mathbf{a}_{22}^{\mathbf{B}} + \mathbf{p}_3^{\mathbf{B}} \cdot \mathbf{a}_{22}^{\mathbf{B}}\right) \cdot (1 + \mathbf{r})$
$\mathbf{p}_3^{\mathbf{A}} = \mathbf{p}_c^* \cdot \mathrm{wr}^{\mathbf{A}} \cdot \mathbf{l}_3^{\mathbf{A}} + \left(\mathbf{p}_1^* \cdot \mathbf{a}_{13}^{\mathbf{A}} + \mathbf{p}_2^* \cdot \mathbf{a}_{23}^{\mathbf{B}} + \mathbf{p}_3^{\mathbf{A}} \cdot \mathbf{a}_{33}^{\mathbf{A}}\right) \cdot (1 + \mathbf{r})$	$\mathbf{p}_3^{\mathbf{B}} = \mathbf{p}_c^{\mathrm{B}} \cdot \mathrm{wr}^{\mathbf{B}} \cdot \mathbf{l}_3^{\mathbf{B}} + \left(\mathbf{p}_1^* \cdot \mathbf{a}_{13}^{\mathbf{B}} + \mathbf{p}_2^* \cdot \mathbf{a}_{23}^{\mathbf{B}} + \mathbf{p}_3^{\mathbf{B}} \cdot \mathbf{a}_{33}^{\mathbf{B}}\right) \cdot (1 + \mathbf{r})$
$\mathbf{p}_c^{\mathrm{A}} \equiv \mathbf{p}_2^* \cdot \mathbf{c}_2 + \mathbf{p}_3^{\mathbf{A}} \cdot \mathbf{c}_3$	$\mathbf{p}_c^{\mathrm{B}} \equiv \mathbf{p}_2^* \cdot \mathbf{c}_2 + \mathbf{p}_3^{\mathrm{B}} \cdot \mathbf{c}_3$
$\mathbf{p}_1^* \mathbf{x} \mathbf{r}_1 + \mathbf{p}_2^* \mathbf{x} \mathbf{r}_2 = \mathbf{p}^*$	(11.12)

The seven equations listed in bold type form a determinate system in seven variables $(p_1^*, p_2^*, r, p_3^A, p_3^B, p_c^A, p_c^B)$. As before, the two remaining equations serve to determine the profit rates (r_2^A, r_1^B) of non-regulating capitals. And now the money wage (in international currency) in each nation incorporates the local price of the nontradable good. Note that Country A will be an exporter of commodity 1 in which it has the absolute cost advantage, while Country B will be an exporter of commodity 2.

xii. Purchasing Power Parity and the Law of One Price

Competition within international industries equalizes the common currency price of individual tradable goods. This is the hypothesis of the Law of One Price (LOP). When applied to some aggregate bundles of goods in two different countries, this is called the Purchasing Power Parity (PPP) hypothesis.

In real competition, the LOP encompasses transportation costs, taxes, and tariffs. Even in competition within a nation, firms with new lower cost capitals cut prices and older firms only partially match these price cuts so that there is always a distribution of price-differentials (chapter 7, section VI.1). The same thing happens in international competition. With fixed exchange rates, the process is similar to that of competition within a nation. With flexible exchange rates, firms face the additional complication that the international expression of their prices can change solely because of variations in the exchange rate. The difference between the two cases is not as great as it may seem, since fixed exchange rate pegs can always be changed. The degree to which international prices reflect changes in exchange rates is known as the degree of "pass through" (Goldberg and Knetter 1997). Whether exchange rates are conditionally fixed or openly flexible, the basic principle is the same: firms must adapt their prices to those of their competitors in order to maintain their market shares. In practice the LOP therefore holds only in an approximate sense and requires time for its adjustment processes.

At the aggregate level, the expectation of price equalization is known as the PPP hypothesis. Since the PPP is an aggregate version of the LOP, it does not imply any particular causation between national price levels and the exchange rate (Isard 1995, 59–60). But for it to obtain, two further conditions are necessary: (1) that the bundle of goods has the same composition across countries; and (2) that the nontradable–tradable price ratio is the same in both countries. If the common set of weights is (w_1, w_2, w_3), then the common currency price indexes of countries A and B depicted here are weighted geometric averages (more appropriate for trended data).[9]

$$\begin{array}{ll} \textbf{Country A} & \textbf{Country B} \\ p^A e \equiv (p_1^*)^{w_1} \cdot (p_2^*)^{w_2} \cdot (p_3^A)^{w_3} & p^B \equiv (p_1^*)^{w_1} \cdot (p_2^*)^{w_2} \cdot (p_3^B)^{w_3} \end{array} \qquad (11.13)$$

In each price index, the first two terms represent the tradable component and the third term the nontradable one. It follows that PPP (i.e., the equality of the

[9] In a trended series, the value of the variable rises or falls over time. In the series 1, 2, 4, 8, the variable grows by a constant percentage. The arithmetic average of this variable will grow by a rising percentage, since more recent values are absolutely larger than past ones, while the geometric average (the n^{th} root of the product of n numbers) will grow by a constant percentage.

price indexes expressed in common currency) also requires that the ratio of the two components be the same in both countries.

The problem with testing the PPP hypothesis is that the baskets of goods used to construct national price indexes are not the same across countries. The producer price index (PPI) includes domestically produced consumption and producer goods but excludes services and imports. On the other hand, the consumer price index (CPI) excludes producer goods and exports but includes domestic services and imported services and consumption goods.[10] In neither index is the composition of the basket restricted to tradable goods. Nor are the overall baskets the same across countries. It is no surprise, therefore, that the real exchange rates based on PPI- or CPI-based prices do not turn out stationary even over very long data spans. Indeed, they often turn out to be trended (Isard 1995, 64, fig. 64.61), which is yet another problem in the long-standing "PPP puzzle" (MacDonald and Ricci 2001, 6).

As an aggregate test of the LOP, the PPP requires equal compositions of national price index baskets. Given that actual baskets are not equal, a proper test of the PPP requires a positive answer to the following question: Once we adjust for compositional and nontradable/tradable price effects within each national price index, is the ratio of the remaining element stationary over time? The Smithian decomposition is particularly useful here. Since the j^{th} price is itself determined by the corresponding regulating price, we can always write $p_j = p_j^* \equiv w^* \cdot v_j^* \cdot \left(1 + \sigma_{PW_j}^*\right) = p_c \cdot wr^* \cdot v_j^* \cdot \chi_j^*$, where $vulc^* \equiv w^* \cdot v^* = p_c \cdot wr^* \cdot v^*$ is the regulating integrated unit labor cost, p_c^* = the consumption goods price index, wr^* = the regulating real wage, and $\chi^* = \left(1 + \sigma_{PW}^*\right)$ is the regulating disturbance term.

$$\frac{p_i}{p_j} = \frac{vulc_i}{vulc_j} \cdot \chi_{ij} = \frac{w_i \cdot v_i}{w_j \cdot v_j} \cdot \chi_{ij} \text{ where } \chi_{ij} = \frac{1 + \sigma_{PW_i}}{1 + \sigma_{PW_j}} \tag{11.14}$$

Then we could replace each of the prices in equation (11.13) by the corresponding product of regulating costs and disturbance terms. Obviously this substitution would not change the relation between the price indexes of the two countries. With this in mind, we can say that in the classical approach the real exchange rate is determined by its regulating components:

$$\frac{p^A \cdot e}{p^B} = \frac{p_c^A \cdot wr^{*A} \cdot v^{*A} \cdot e \cdot \left(1 + \sigma_{PW}^{*A}\right)}{p_c^B \cdot wr^{*B} \cdot v^{*B} \cdot \left(1 + \sigma_{PW}^{*B}\right)} \tag{11.15}$$

The national prices of consumption goods in each country can be expressed as $p_c = (p_c/p_T) \cdot p_T$, where p_T will be defined as the price of a bundle of tradable goods which is the same in both countries (commodity 2 in equation (11.12)). Then the LOP implies $p_T^A \cdot e/p_T^B \approx 1$. In keeping with the empirical results of chapter 9 (see equation 9.5), we can also assume that the disturbance term is relatively small so that $\frac{\left(1+\chi^A\right)}{\left(1+\chi^B\right)} \approx 1$. Then the classical argument implies that the real exchange rate

[10] US Bureau of Labor Statistics (BLS) at http://www.bls.gov/dolfaq/bls_ques16.htm.

is essentially driven by two components: relative real regulating costs and the ratio of nontradable/tradable goods.

$$\frac{p^A \cdot e}{p^B} = \frac{wr^{*A} \cdot v^{*A} \cdot (p_c/p_T)^A \cdot e \cdot \left(1 + \chi^{*A}\right)}{wr^{*B} \cdot v^{*B} \cdot (p_c/p_T)^B \cdot \left(1 + \chi^{*B}\right)} \cdot \left(\frac{p_T^A \cdot e}{p_T^B}\right) \approx \left(\frac{wr^{*A} \cdot v^{*A}}{wr^{*B} \cdot v^{*B}}\right) \left(\frac{(p_c/p_T)^A}{(p_c/p_T)^B}\right) \tag{11.16}$$

xiii. Purchasing Power Parity and the compositional component of the real exchange rate

Equation (11.13) established that if two national price indexes had the same overall composition in the sense of having the same composition of goods and the same ratio of nontradable to tradable prices, the two indexes would be proportional if the LOP held at the individual level. Then their ratio, which is the real exchange rate, would be constant and PPP would hold. Conversely, if compositional effects are significant, the real exchange would not be stationary even if the LOP did hold.

xiv. Actual costs as proxies for regulating costs

In practice, we only have data on actual costs. But the Smithian decomposition also applies to actual prices, costs, and profit, since profit is the difference between price and costs. Hence, we can also express the j^{th} price as $p_j \equiv w \cdot v_j \cdot \left(1 + \sigma_{PW_j}\right)$, where now $w \cdot v_j$ is the actual integrated unit labor cost and σ_{PW_j} is the actual integrated profit–wage ratio in industry j. If the industry is the regulating one, then the actual terms are equal to regulating terms. In equation (11.12) this applies in Country A to industry 1 whose commodity is an export and to industry 3 whose nontradable commodity is nationally competitive. On the other hand, it does not apply to industry 2 of Country A, because it is a non-regulating industry whose costs would be higher than the regulating costs and integrated profit–wage ratio correspondingly lower. Still, an import-competing industry like this could only survive if its cost remains within striking distance of the regulating costs: the two costs can never get too far apart. Then actual costs would have similar trends as regulating costs, so we might write the latter as functions of the former.

$$\left(\frac{wr^{*A} \cdot v^{*A}}{wr^{*B} \cdot v^{*B}}\right) = f\left(\frac{wr^A \cdot v^A}{wr^B \cdot v^B}\right) \tag{11.17}$$

The remaining issue involves a proxy for the nontradables/tradables factor $\left(\frac{(p_c/p_T)^A}{(p_c/p_T)^B}\right)$. Given that the producer price index (p) covers many more tradable goods than either the consumer price index (p_c) or the GDP deflator (p_{GDp}), we could use the ratio of either of the latter two to the former. Alternately, since the ratio of nontradable/tradable prices has been found to be correlated with real GDP per capita (RGDPpc), we could use the latter as a proxy for the former. This yields three possible formulations in terms of some general functional form $h(\cdot)$:

$$\frac{(p_c/p_T)^A}{(p_c/p_T)^B} = h(\tau) \quad \text{where} \quad \tau = \frac{(p_c/p)^A}{(p_c/p)^B}, \frac{\left(p_{GDP}/p\right)^A}{\left(p_{GDP}/p\right)^B} \text{ or } \left(\frac{RGDPpc^A}{RGDPpc^B}\right) \tag{11.18}$$

Putting equations (11.16) and (11.8) together yields the following general empirical form:

$$\frac{p^A \cdot e}{p^B} \approx f\left(\frac{wr^A \cdot v^A}{wr^B \cdot v^B}\right) \cdot h(\tau) \tag{11.19}$$

$$\log\left(\frac{p^A \cdot e}{p^B}\right) \approx \log\left(f\left(\frac{wr^A \cdot v^A}{wr^B \cdot v^B}\right)\right) + \log\left(h\left(\tau\right)\right) \tag{11.20}$$

While we do not have any a priori specifications of the functional forms $f(\cdot)$ and $h(\cdot)$, there are two widely used possibilities: $f\left(x\right) = a \cdot x$, or $f\left(x\right) = a \cdot x^b$ in which case $\log\left(f\left(x\right)\right) = \log\left(a\right) + b \cdot \log\left(x\right)$ where a, b are unknown parameters. The former can be directly utilized in (11.16) by using actual real costs in place of regulating costs, and the actual ratio of consumer price index or the GDP deflator to the producer price index for the nontradable/tradable price term.[11] The existence of unknown constants does not matter in this case, since they would not affect the stationarity or non-stationarity of the real exchange rate. On the other hand, we could only make use of the log linear functional forms through regressions in which the parameters could be estimated. The empirical analysis in section VI will begin with the former assumption and move on to the latter.

6. Trade balances, capital flows, and the balance of payments

This brings us to the second problem: If free trade leads to persistent trade imbalances, how is the balance of payments maintained? The answer, suggested by Marx but only fully worked out by Harrod, is that the international money flows created by unbalanced payments will lower interest rates in the trade surplus country and raise them in the deficit one,[12] and this interest rate differential will induce financial capital flows from the former to the latter until payments are in balance. Given that differences in real costs cause trade imbalances, the overall payments will be in balance when the surplus country exports its surplus as international loans while the trade deficit country covers its deficit through international borrowing. All of this occurs through the operations of free trade and free financial markets.

Ricardo relies on the Quantity Theory of Money to argue that the money inflow incurred by the trade surplus country would raise its price level. Marx was strongly critical of the quantity theory (chapter 5, section III.2), and his response to this step in Ricardo's argument is visceral (Shaikh 1980a, 34):

> It is indeed an old humbug that changes in the existing quantity of gold in a particular country must raise or lower commodity prices within this country by increasing or decreasing the quantity of the medium of circulation. If gold is exported, then, according to the Currency Theory, commodity-prices must rise in the country importing this gold, and decrease in the country exporting it. ... But, in fact, a decrease in the quantity of gold lowers the interest rate; and if not for the fact that the fluctuations

[11] If $f\left(x\right) = a \cdot x$, then the parameter "a" cancels out in index numbers, since these are defined as by the ratio of $f(x)$ at time t to $f(x)$ in the base year.

[12] It is interesting that even Milton Friedman accepts that a rise in the money supply would first lower interest rates (Ciocca and Nardozzi 1996, 8n2).

> in the interest rate enter into the determination of cost-prices, or in the determination of demand and supply, commodity-prices would be wholly unaffected by them. (Marx 1967c, ch. 34, 551)

We do not know whether Marx ever pursues the implications of this point. All that we know is that nothing more on it appears in the specific parts of Marx's writing that Engels chose to compile into Volume 3 of *Capital*. But we do know that Harrod arrives at the same conclusion almost a century later, in the third revision of his own book on *International Economics* (Harrod 1957, ch. 4, sec. 5, and chs. 7–8). Classical theory, he says, tends to treat international capital flows as if they were independent of trade flows. However, short-term capital movements may be triggered by exchange rate movements and/or interest differentials (96, 115 text and n. 1). The money flows induced by a surplus in the balance of payments will reduce liquidity in the country, rather than raising its price level. This will tend to reduce interest rates in the country[13] and stimulate a capital outflow without necessarily affecting the trade balance. To the extent that domestic investment is responsive to the interest rate this may stimulate the level of output and increase imports through the Keynesian channel. This may reduce the trade surplus but it will not eliminate it (130, 131–133, 135, 139). The important point is that trade imbalances and short-term capital flows are intrinsically linked: "the capitalists of a country may be tempted to invest (or borrow) abroad precisely *because* of the conditions which the . . . balance of trade has brought about" (115, emphasis added).

Harrod notes that his version of the balance of payments adjustment "is classical in that it postulates a self-righting mechanism at work . . . [but] it attributes the self-righting effect to the capital movements induced and not to a change in the commodity balance" (Harrod 1957, 132). In the case of fixed exchange rates the same effect can be partially or wholly produced through policy by having the central banks raise interest rates in countries with balance of payments deficits so as to induce the capital inflows needed cover the deficit. This may be necessary to prevent the drain in reserves that may otherwise occur. Then the *central bank would be doing what the market would have done in the case of flexible exchange rates* (85–86). Finally, the short-term capital flows induced by a payments imbalance will tend to eliminate the interest rate differentials that stimulate these, so international interest rates will tend to be equalized (116).

Harrod makes several other important points. Prices of tradable goods are equalized across countries, while those of nontradable goods are not (Harrod 1957, 54–56, 62–63). Real wages are also not equalized across countries (63).[14]

[13] A gold inflow makes the country more liquid. "If the banks fully offset the inflow, their position becomes progressively more liquid, and if they do not [that] of the public becomes more liquid." Even if the banks remain indifferent to their increasing liquidity, as "gold is concentrated in the central bank," it will eventually hold nothing but gold in its reserves, thereby having "no means of earning its livelihood" (Harrod 1957, 131).

[14] Harrod actually says that "factor prices" are not equalized across countries, by which he means wages and profit rates (Harrod 1957, 63). Yet he says that interest rates are equalized across countries through short-term capital flows (60, 116). And I showed in chapter 7, section VI.5, that incremental rates of profit are also equalized across countries.

And with flexible exchange rates, the equilibrium exchange rate is determined by the condition that the balance of payments be zero. This implies that imbalances of payments not only change liquidity and affect interest rates but also spill over to the foreign exchange market. Lastly, he notes that the Law of Comparative Costs is often presented as "an account of the direction which trade *ought* to take, or, what is the same thing, of the way in which countries *ought* to dispose of their productive resources" (39, emphasis added). However, actual international trade is undertaken by profit-seeking firms whose only concern is whether they can "get a remunerative price" (70). "The exporter or importer knows nothing about comparative costs; all he knows are the quoted prices at home and abroad" (73). The real question, therefore, is not how trade ought to be conducted but how it is conducted.

7. Summary of the classical approach to free trade

Several themes emerge from the preceding analysis. First, industry comparative costs and terms of trade are determined by relative real wages and relative productivities of regulating capitals, and the effect of nontradable/tradable goods (equations (11.3), (11.8), (11.11), (11.12), (11.16)). Second, the direction of a nation's trade balance is determined by its absolute cost advantage or disadvantage (a classical channel) while its size will also depend on relative national incomes (a Keynesian channel). Changes in the latter will affect the trade balance but will not permanently switch it from surplus to deficit unless they switch comparative costs. Third, trade imbalances will create imbalances of payments which will affect interest rates and induce short-term international capital flows (a classical channel), and perhaps also change national income through their influence on investment (the Keynesian channel). The end result will be that countries with absolute cost advantages will recycle their trade surpluses as foreign loans while countries with absolute cost disadvantages will cover their trade deficits through foreign borrowing. All of this will arise through the workings of free trade and free financial flows, although policy measures may produce similar effects (Harrod 1957, 85–86).

VI. EMPIRICAL EVIDENCE

At an empirical level, standard and classical theories of free trade differ on the expectations about balance of trade and the real exchange rate. In the first domain, the comparative advantage hypothesis implies that the real exchange rate will vary so as to ensure that trade remains balanced in the face of changing circumstances: automatic real exchange rate adjustments will ensure that "trade will be balanced so that the value of exports equals the value of imports" (Dernburg 1989, 3). This hypothesis gives rise to the empirical expectation that even though "an economy's international competitiveness might rise and fall over medium-term periods . . . on average, over a decade or so, ebbs and flows of competitive 'advantage' would appear random over time and across economies" (Arndt and Richardson 1987, 12). Milberg (1994, 224) notes that "the notion of comparative advantage continues to dominate thinking among economists." A nice illustration of this is Krugman's (1991) insistence that comparative advantage continues to operate in the modern world and would automatically

lead to balanced trade among nations if only it were given free rein. Even the theorists of the New International Economics School, who emphasize oligopoly, increasing returns to scale, and various strategic behaviors, begin from the premise that comparative advantage would hold in the absence of such "imperfections" (Milberg 1993, 1). It is from this perspective that Krugman and Obstfeld (1994, 20) inveigh against those who believe that "free trade is beneficial only if your country is productive enough to stand up to international competition." The classical argument leads to exactly the conclusion they dismiss: differences in competitiveness are rooted in differences in real costs (productivities and real wages) that give rise to persistent trade imbalances.

The empirical evidence strongly favors the classical hypothesis over the Ricardian-neoclassical one. In the postwar period, neither competitive advantages nor trade balances have been the least bit random across space or time. On the contrary, the "appearance of persistent, marked competitive advantage for [countries such as] Japan and marked competitive disadvantage for countries [such as] the United States," coupled with "persistent, marked trade balance surpluses for Japan and deficits for the United States" have characterized much of the postwar period (Arndt and Richardson 1987, 12). Neither the fixed exchange rate regimes of the Bretton Woods period, nor the flexible and highly volatile exchange rate regime which came into being in 1973, have altered this unpleasant fact. Figure 11.2 depicts the trade balances of fifteen major countries from 1960 to 2009. These are measured as the export–import ratio in common currency, so that a ratio greater than one signifies a trade surplus and a ratio below one signifies a trade deficit. Finland, Japan, the Republic of Korea, Norway, and Sweden in panel 1 all move from trade deficits to trade surpluses over the half-century span. Korea's path from a huge trade deficit to a modest surplus is quite remarkable, as is Norway's steady move in the same direction. Panel 2 depicts a similar set of steady improvements from deficit to surplus for Denmark, Italy, and the Netherlands. Panel 3 looks at four "steady" countries, Germany and Canada with persistent trade surpluses and France and Spain with modest and large persistent deficits, respectively. Finally, in Panel 4, we find three countries with generally rising deficits, including the United States and Australia—the latter having run a balance of trade deficit in forty-three of the fifty years from 1960 to 2009, and a current account deficit in forty-eight of those years (Mason 2010)!

We now consider the empirical implications of standard and classical theories of real exchange rates. Standard theory says that the terms of trade will move to automatically balance trade while the classical theory says that the terms of trade are pinned by real costs so that trade will generally be unbalanced. The empirical evidence on persistent trade imbalances clearly favors the classical theory. However, both theories make use of the LOP, albeit in different forms. The LOP in turn implies that PPP will obtain for baskets of goods with the same composition. Conversely, PPP may not obtain if baskets are different across countries, or if the LOP did not apply in the first place. It was noted in the preceding section that if PPP did not obtain, one could distinguish between the first and second causes through the empirical estimation of the real costs, adjusted for tradable/nontradable goods, of the two national baskets (equation (11.6)). This would also address in passing an alternate hypothesis that competitive processes equalize unit costs across nations (Officer 1976, 10–12).

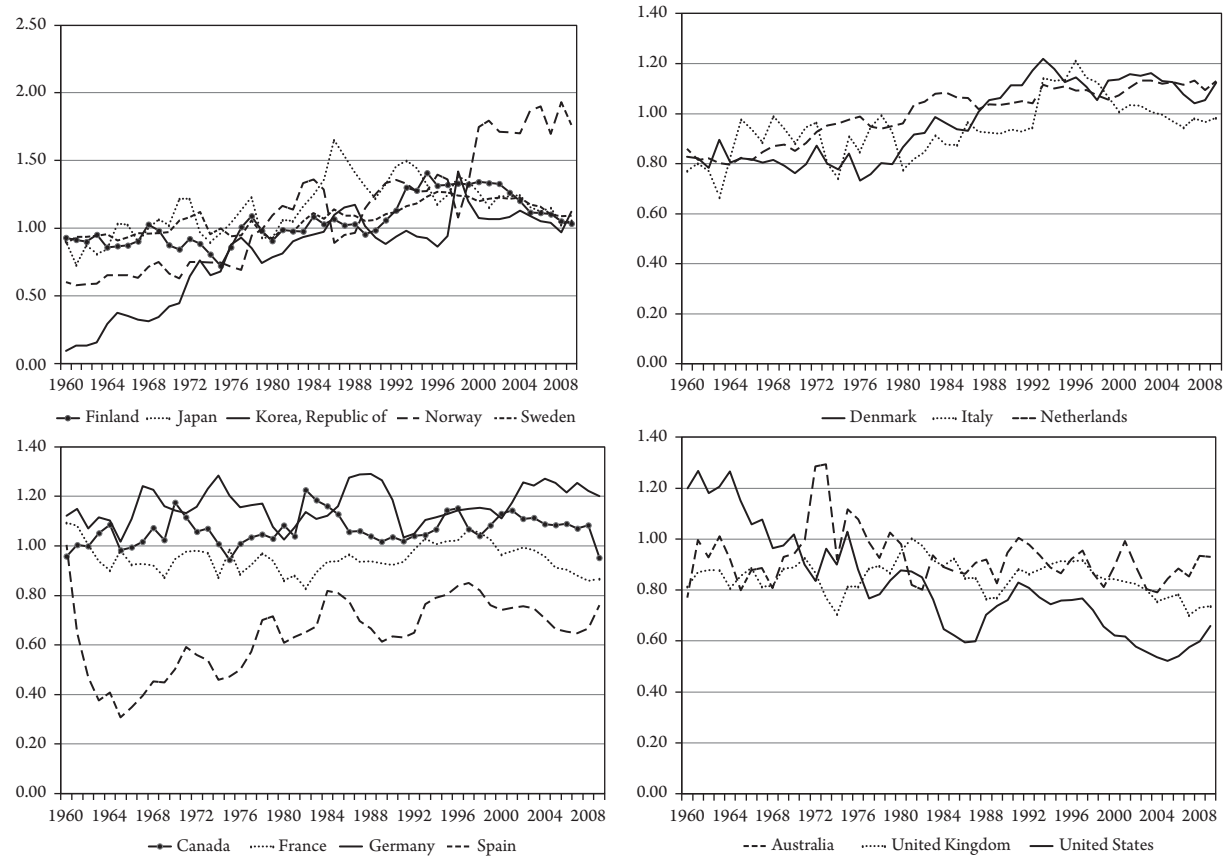

Figure 11.2 Trade Balances in Major Countries, 1960–2009 (Exports/Imports)

The PPP hypothesis requires that real exchange rates to be stationary over the long run.[15] The large empirical literature gives rise to several enduring PPP "puzzles" involving the real exchange rate. First, it is not stationary over the short run no matter which general price index is utilized (Isard 1995, 63–65). Second, while it may display reversion to a "target level" over runs greater than ten to twenty years, "that target level is not the PPP value" because it is not stationary (Engel 1999, 21). Third, standard econometric tests have been shown to have very low power in distinguishing between unit root and stationary processes (20–22) and this has given rise to sharply differing positions. Some conclude that "PPP may not hold after all" (MacDonald and Ricci 2001, 5). Still others argue that there is a trend to the real exchange rate, but it can probably be explained by the relative price of tradables to nontradables (Engel 1999, 22), although the actual evidence on this is mixed (Rogoff 1996, 660–662). Finally, even if there is reversion to a non-stationary mean, the "speed of convergence is extremely slow" in comparison to what is theoretically expected (Rogoff 1996, 647). Standard theory requires that the adjustment toward a stationary center of gravity be quite rapid because in perfect competition the LOP is taken to be immediate (Isard 1995, 60–61) and because neoclassical theory assumes that "a monetary shock should be absorbed in prices and exchange rates with a lag of about two years overall" (MacDonald and Ricci 2001, 5). The latter condition translates into the requirement that the real exchange rate revert to its (stationary) mean with a half-life of about one-third of a year.[16] Yet the "typical half-life reported in . . . studies is between 3 to 4 years" (MacDonald and Ricci 2001, 5), which is roughly ten times too large. Not surprisingly, this has led to a search for alternate explanations for the movements of the real exchange rate: macroeconomic factors; tradable/nontradable goods prices (Harrod–Balassa–Samuelson effects); real interest rate differentials; portfolio balance effects; pricing behavior of exporters; terms of trade fluctuations; transportation costs, tariffs, and taxes; and costs of distribution of goods and services (MacDonald and Ricci 2001, 5–7).

It is important at this point to distinguish between speed of convergence and center of gravity issues. Neoclassical theory requires that convergence be very rapid, but classical theory only requires convergence in the form of a cycle of "fat and lean" years, say seven to eleven years. The latter implies a half-life of around one and a half years (i.e., a mean reversion speed of six years or so). Imbs et al. (2005, 1–2) argue that if one takes into account the fact that different components of a price index have different speeds of adjustment, the average half-life "may fall to as low as eleven months, significantly below the 'consensus view' of three to five years" (thirty-six to sixty months). Similarly, neoclassical theory only admits the tradables/nontradables effect as a source of deviations from stationarity, while the classical argument also allows for differences in real unit labor costs.

[15] If p = the domestic price level, p_f = the foreign price level, and e = the nominal exchange rate (foreign currency per unit domestic), then the (absolute) PPP hypothesis is that $p \cdot e = p_f$. If there are constant proportional transportation costs, taxes, and so on, then we get the relative PPP hypothesis that $p \cdot e = \alpha \cdot p_f$, where α. is some constant. The latter is equivalent to the statement that the real exchange rate $(p \cdot e/p_f)$ is constant. Equivalently, it implies that the rate of change of the nominal exchange rate offsets the relative rate of inflation (Isard 1995, 58–59).

[16] With a half-life of 0.35 years, 95% of a shock will die out in about two years.

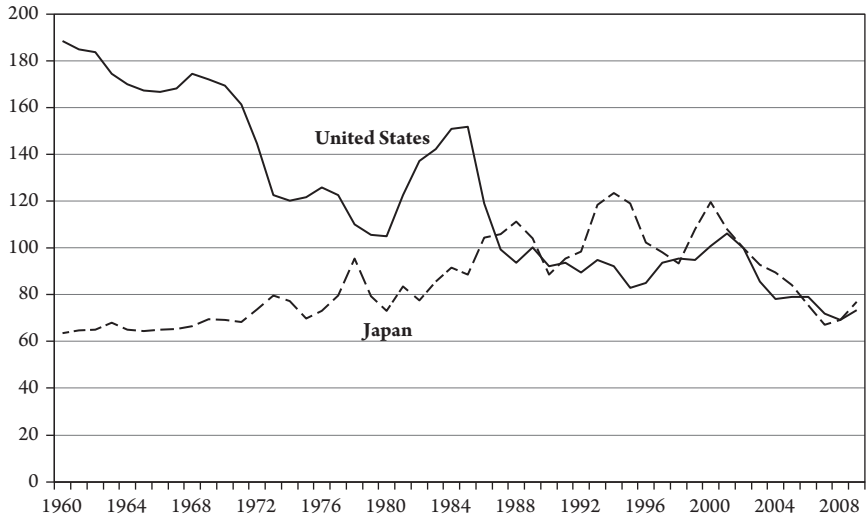

Figure 11.3 Real Effective Exchange Rates (PPI-Basis), United States and Japan, 1960–2009
Source: BLS and authors' calculations.

Figure 11.3 charts the real effective exchange rates in terms of producer prices for the United States and Japan. It is eminently clear that these are not stationary in either the short run or the long run. This too is a perfectly general pattern, and we can immediately see why "tests based on aggregate price indexes overwhelmingly reject purchasing power parity as a short-run relationship" (Rogoff 1996, 647), and why even the fifty-year span of the postwar period does not provide much support for the notion that real exchange rates are stationary in some putative long run. It is this difficulty that forces some supporters of the PPP hypothesis to argue that any convergence which might exist must be "extremely slow" (647) requiring perhaps seventy-five or even a hundred years of data in order to become distinguishable from a random walk (Froot and Rogoff 1995, 1657, 1662).

One can also formulate the PPP hypothesis in terms of the rates of change of the relevant variables, in which case the hypothesis implies that nominal exchange rates will depreciate at the same rate as inflation (so as to maintain a constant real exchange rate). Figure 11.3 also makes it clear why this (relative) version of PPP is equally unsupportable as a general empirical proposition. However, in the particular case of high inflation, (relative) PPP does appear to hold (Froot and Rogoff 1995, 1651; Isard 1995, 62), as illustrated in table 11.4. This turns out to be an important piece of evidence because the classical theory of trade predicts both the trended nature of real exchange rates shown in the figure 11.3 and also the correlation between nominal exchange rates and inflation rates in the case of high relative inflation (Shaikh 1995, 73–74). The reason is simple. We can see from equation (11.20) that the rate of change of the nominal exchange rate $\hat{e}$ equals the rate of change of a function of relative real costs $\hat{f}$ plus the rate of change of a function of nontradable/tradable price $\hat{h}$ minus the relative inflation rate $\hat{p}$. The first two elements will be small because international relative real wages and relative productivities do not change much from year to year. Then if the relative inflation rate is also small, it will not dominate so that relative

Table 11.4 Changes in Exchange Rates and Relative Price Levels, High Inflation Countries

	Relative Inflation Rate	*% Change in Exchange Rate*
Argentina	40.8	39.3
Brazil	26.6	26.4
Chile	47.0	44.1
Colombia	9.7	11.7
Iceland	14.2	13.5
Indonesia (1967–1980)	16.4	10.8
Israel	13.2	13.4
Peru (1960–1980)	13.1	11.8
South Korea	11.4	10.0
Uruguay	33.3	31.3
Zaire	12.1	16.1

Source: Barro 1984, 542, table 20.4: relative to the United States, % change per year over 1955 to 1980.

PPP will not hold. However, when the relative inflation rate is large it will dominate so that changes in the nominal exchange rate will roughly correspond to relative inflation and relative PPP will appear to hold. This is exactly what Barro (1984, 542, table 20.24) finds at an empirical level, only he presents its evidence in support of the PPP hypothesis.

$$\hat{e} \approx \hat{f} + \hat{h} - \hat{p} \tag{11.21}$$

1. The persistence of empirically weak theoretical models as a guide to policy

The travails of orthodox exchange rate theory have led to four types of reactions: as noted, some have focused on factors that might account for the slow convergence and non-stationarity of the real exchange rate; others reject the very notion that exchange rates are regulated by any underlying economic factors (Harvey 1996, 581); and still others, like those in the New International Economics School, retain the principle of comparative advantage but modify its conclusions by introducing "imperfections" such as oligopoly, economies of scale, and strategic factors.

Despite these problems, both PPP and comparative advantage hypotheses continue to be widely used in economic models (Isard 1995, 59, 73; Krugman 1995, 63). Stein (1995, 185) claims that even though "most scholars are aware of the deficiencies of these models, the profession continues to use them wholly or partly because they do not have a logically satisfactory substitute." More significantly, these same models continue to have a major influence on economic policy. For instance, the PPP hypothesis is frequently used as a policy rule-of-thumb because when "a country establishes or adjusts an exchange rate peg, it generally relies on some type of quantitative framework, such as the PPP formula, in order to help assess the appropriate level for the new parity" (Isard 1995, 70). In a similar vein, the assumption that an unencumbered real exchange rate automatically makes all trading nations equally competitive regardless of their differences in technology or levels of

development lies behind many of the modern neoliberal programs of the IMF and the World Bank (Frenkel and Khan 1993).

The empirical and policy implications outlined above are of considerable importance because the classical theory of free trade leads to very different conclusions. First, the real exchange rate of a country will follow the time path of its relative real unit costs. Since these may be rising or falling over time, real exchange rates will generally be nonstationary. This is consistent with the evidence in Figure 11.3. In addition, relative real unit costs of production tend to change relatively slowly over any length of time because they reflect changes in relative wages and relative productivities. Hence, long-run changes in the corresponding real exchange rate (i.e., the difference between the rate of change of nominal exchange rates and relative national prices) will also be small. This implies that when some country has a relatively high rate of inflation in any given year, its nominal exchange rate must depreciate at roughly the same rate in order to make the real exchange rate track the trend rate of change in real unit costs (equation (11.21)). This explains why neither absolute nor relative PPP works when inflation rates are low (as evidenced by the trends in figure 11.3) and also why relative PPP does appear to work when inflation rates are relatively high, as shown in table 11.4.

2. Empirical evidence on the relation between real exchange rates and real costs

We turn now to the empirical test of the foregoing classical hypothesis based on results reported in Shaikh and Antonopoulos (2012). The first test will be a direct comparison between real exchanges rates and their hypothesized fundamentals for both the United States and Japan as derived in equation (11.20). On the econometric side, the two variables will be shown to be cointegrated with speeds of adjustment which are statistically significant and of the correct sign as reported in tables 11.5 and 11.6. This evidence supports the classical hypothesis that long-run variations of the real exchange rate are regulated by real unit labor costs adjusted for the mixture of tradable/nontradable goods.

The deviations of the real exchange rate from its fundamentals depend on conjunctural factors within a country or outside of it. These include policy changes and market factors. Since trade imbalances will tend to be persistent for any given constellation of real underlying factors, overall equilibrium requires a zero ex ante balance of payments. Autonomous foreign capital flows can change the balance of payments and change nominal and real exchange rates as well as nominal and real interest rates. Alternately, an autonomous change in the real interest rate can induce foreign capital inflows and lower the interest rate. Thus, high real interest rates in the United States in the early 1980s attracted a large capital inflow, which caused the exchange rate to appreciate and the interest rate differential to fall. More recently, the crisis in Europe has precipitated a capital flight from Southern Europe into Germany, driving up the interest rates in the former and driving them down in the latter (Castle 2011, B4). But since Germany is now within the European Union, internal flows such as this have no direct impact on the euro. These examples make it clear that at best only a portion of the deviation of the real exchange rate from its fundamentals is likely to be correlated with interest rate differences. Nonetheless, in the absence of a more fully developed model

of the factors involved, I include the real interest rate differential $(i - i^*)$ between the domestic real interest rate and a trade-weighted average of foreign rates, as a potential explanatory variable of short-run deviation.

The theoretical hypothesis in equation (11.16) says that relative common currency price (the real exchange rate) $er \equiv \left(\frac{pe}{p^*}\right)$ will be regulated by its center of gravity $\left(\frac{wr^{*A} \cdot v^{*A}}{wr^{*B} \cdot v^{*B}}\right)\left(\frac{(p_c/p_T)^A}{(p_c/p_T)^B}\right)$ which is the corresponding regulating (best practice) vertically integrated unit labor costs adjusted for nontradable/tradable goods effects. All country variables were measured relative to a bundle of major trading countries (excluding themselves) because in international competition countries compete against others in the same league, so to speak. It is also empirically appropriate for the consideration of international capital flows, since capital flows out to many locations, and flows in from many others. For this reason, any conclusions about the bilateral relation between the United States and Japan would have to be drawn from their separate multilateral relations with their competitors and trading partners.

The central difficulty in constructing empirical measures of the necessary variables arises from estimating best practice vertically integrated unit labor costs. First of all, since the commodities which comprise the tradables of a given country may have corresponding best practice techniques in some other countries, one might use the unit labor costs of these other countries to construct the overall average best practice cost of the tradables bundle in question. Alternately, one might assume that any given country is one of the best practice producers of its own exports, so that if we pose our question in terms of common currency export prices (export-price deflated real exchange rates), the problem reduces one of estimating the unit labor costs of a given country's export sector. Unfortunately, neither approach is easily implemented due to a lack of appropriate data. The present study uses producer price indexes for the construction of trade-weighted effective real exchange rates and manufacturing real direct unit labor costs[17] as the proxy for the corresponding integrated real unit labor costs since estimation of the latter would require input–output tables for all of the countries involved over a sufficient time span to permit the creation of an adequate time series. Finally, the ratio of the price of all consumption goods to tradable consumption goods was proxied by the ratio of the CPI to the PPI on the grounds that the latter covers more tradable goods than the former (Harberger 2004, 10). The CPI excludes tradables such as producer goods and includes services many of which are nontradables. The PPI, on the other hand, includes all exportable goods and excludes all services, both of which tilt its composition in favor of tradables. The reliance on direct unit labor costs, CPI and PPI has the further advantage that all the variables are available for all of the major OECD countries over a long time span. Further details are in appendices 11.1 and 11.2.

Despite these empirical approximations, the results are quite strong. Figures 11.4 and 11.5 show that the real effective exchange rates of the United States and Japan

[17] The IMF calculates an effective exchange rate measure in terms of the nominal unit labor costs relative to the unit labor costs of its trading partners (Harberger 2004, 14). But what we need is a measure of real unit labor costs of each country relative to the real unit labor cost of its trading partners, with no exchange rate on either side. Hence, I use BLS data on unit labor costs and CPI in each country to calculate real unit labor costs.

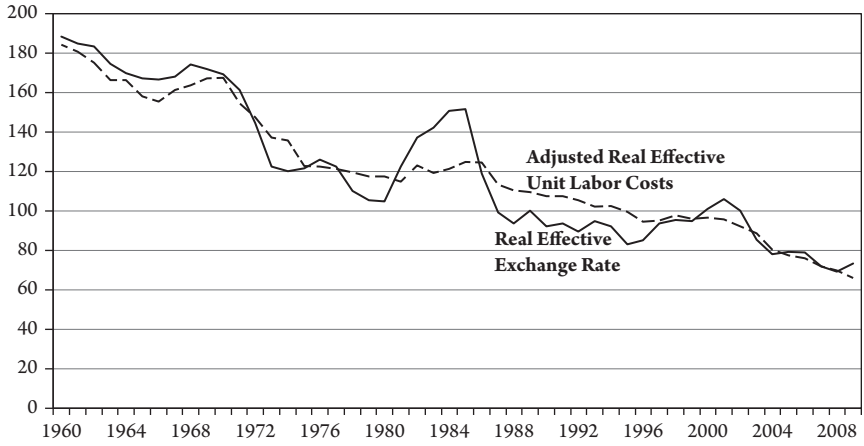

Figure 11.4 US Real Effective Exchange Rate and Adjusted Real Effective Unit Labor Costs

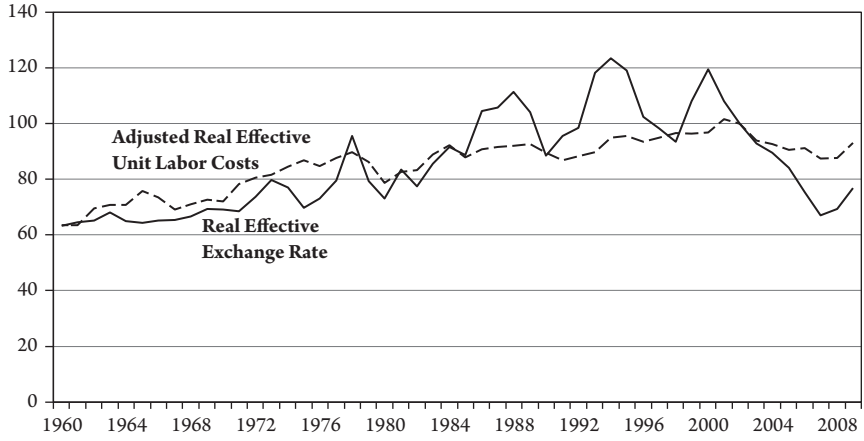

Figure 11.5 Japan Real Effective Exchange Rate and Adjusted Real Effective Unit Labor Costs

do indeed gravitate around the corresponding real unit labor costs (adjusted for nontradable/tradable effects), both variables being defined relative to the trading partners of the country in question. Given that the price data involves index numbers whose scale is arbitrarily defined by the base year (2002 = 100), the real unit labor cost variable was rescaled to have the same period average as the real exchange rate. This facilitates visual comparison but, of course, has no effect on the econometric tests.

The classical notion of turbulent gravitation is perfectly compatible with deviations of the real exchange rate from the more slowly changing real unit labor costs. Fluctuations in the real exchange rates can be linked to changes in nominal exchange rates and relative national price levels. In the case of relative price levels, the two oil shocks in 1973 and 1979 are obvious candidates for explanatory factors, since they may have a greater effect on countries that rely more heavily on energy imports. In the case of the nominal exchange rate, fluctuations in international short-term capital flows are

likely candidates. In the United States, the real exchange rate deviates sharply from its fundamentals in the 1980–1987 and 1997–2003 periods but then returns toward it. The first period has been widely discussed in the literature, and there is considerable debate over its underlying causes. One prominent explanation has been that the large run-up in the interest rate differential between the United States and its trading partners led to large short-term capital inflows which in turn gradually extinguished the interest rate differential (Friedman 1991). The second period is associated with the equity price bubble from the late 1990s to the early 2000s. Here the relevant variable might be the differential in equity market rates of return, rather than the interest rate differential. We will nonetheless utilize the latter as a proxy for the former, given the lack of consistent data on OECD equity market rates of return. In the case of Japan, the matter is complicated by several well-known short-term interventions in the exchange rate market. The most significant of these are deemed to have been in 1976–1978, 1985–1988 (Plaza Accord), 1992–1996, and 1998–2004 (Nanto 2007, CRS-4). In this light, we test whether interest rate differentials remain influential in explaining the deviations of the Japanese real exchange rate from its fundamentals.

This brings us full circle to the question of the validity of the LOP. I showed that even if the LOP held for individual prices, PPP would not hold at the aggregate level unless both the composition of commodity bundles and the relative price of nontradable/tradable was the same in both countries. Conversely, if the LOP held but the latter factors differed across nations the actual real exchange rate would gravitate around the adjusted real unit labor cost ratio derived in equation (11.16). It follows that the appropriate aggregate test of the LOP is to look at the deviation of the real exchange rate from its fundamentals. Figure 11.6 depicts this ratio for both the United States and Japan. Given the data limitations discussed earlier, and the large impact of the anomalous 1980–1987 period, it is remarkable how stable this ratio is over the long run. This measure then provides us with a robust policy rule-of-thumb for the sustainable level of the real exchange rate which is clearly superior to the widely used PPP hypothesis (recall figure 11.3).

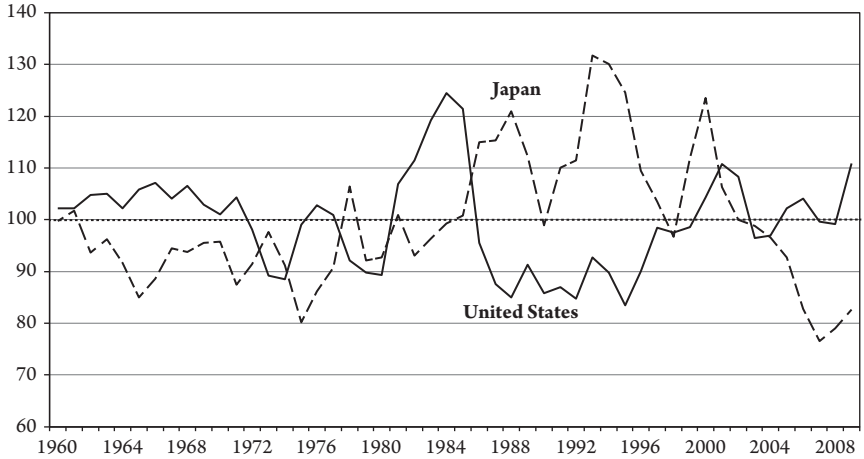

Figure 11.6 Law of One Price at the Aggregate Level, United States and Japan, 1960–2009

It remains to provide an econometric test of our general hypothesis that the real exchange rate is determined in the long run by real unit labor costs, with the real interest rate differential as a possible explanatory variable of short-run deviations. In order to test for the existence of a long-run relationship between the real exchange rate and relative unit labor costs, we deployed the ARDL method (Pesaran, Shin, and Smith 2001) using Microfit 5.0. The main advantage of this bounds test method is that no prior unit root testing is required. There are two steps in the ARDL method. In the first step, an *F*-test is used to investigate the possibility of a long-run relationship between the variables in an error correction model (ECM). The computed *F* statistic for both countries indicates the existence of a long-run relationship, with the causation running from real unit labor costs to the real exchange rate. Once a long-run relationship has been established, we estimate the long-run coefficients from the underlying ARDL relationship along with the error correction coefficient from the associated error correction mechanism. The appropriate lag length of this ARDL is chosen by using the Akaike Information Criterion (AIC). The final results indicate a strong stable long-run relation running from real unit labor costs to the real exchange rate, with moderate speeds of adjustment. The dependent variable in each case is the log of the real exchange rate, and the independent variable the log of the (direct) real unit labor costs adjusted for tradable/nontradable goods. The real interest rate differential was tested as a determinant of short-run fluctuations in the real exchange rate and was statistically significant in the United States but not in Japan. Further details are in appendix 11.1.IV.

3. Implications of the classical approach to long-run exchange rates

Several practical implications can be derived from the preceding results. First, it allows us to derive a practical policy rule-of-thumb for the movements of the (real and nominal) exchange rate: the sustainable real exchange rate is that which corresponds to the relative competitive position of a nation, as measured by its relative real unit labor costs. Second, it tells us that since the real exchange rate is pinned (through competition) by real unit costs and other factors, it is not free to adjust in such a way as to eliminate trade imbalances. Indeed, such imbalances will be persistent and will

Table 11.5 ECM Results for Japan, 1962–2008, Dependent Variable = LRXR1JP

Regressor	*Coefficient*	*Standard Error*	*T-Ratio[Prob]*
Constant	–1.5581	0.98941	–1.5748[.124]
LRULCJP1	1.3533	0.22179	6.1017[.000]
Speed of Adjustment	–0.45378	0.11674	–3.8872[.000]

Table 11.6 ECM Results for United States: 1962–2008, Dependent Variable = LRXR1US

Regressor	*Coefficient*	*Standard Error*	*T-Ratio[Prob]*
Constant	0.36445	0.43908	0.83005[.411]
LRULCUS	0.91982	0.093053	9.8850[.000]
Speed of Adjustment	–0.33641	0.085373	–3.9405[.000]

have to be covered by corresponding direct payments and/or capital inflows (foreign debt). It follows that currency devaluation will not, in itself, eliminate trade deficits. Rather, it would be successful only to the extent that it affects the real unit costs (via the real wage) and/or the nontradable–tradable price ratio of consumer goods (Shaikh 1995, 72). And that depends on the ability of workers and consumers to resist such effects[18]. Third, it tells us that the real exchange rate of a country is likely to depreciate when a country's relative competitive position improves, other things being equal. Just as in the case of competition within a country, in which an industry with relatively falling costs will be able to lower prices, so too in international competition will a country's export prices fall relatively, in common currency, when the corresponding relative real costs of production fall. It should be added that just as a cost-based decline in a commodity price is very different from the fall in its price due to distress in the industry, so too is the competitive depreciation of a currency quite distinct from its depreciation in a crisis. A fourth implication is the real exchange rate between two countries that will be stationary only over an interval when their relative competitive positions and relative degrees of openness remain unchanged. In the absence of these special conditions, the real exchange rate will be nonstationary, which implies that in general PPP will not hold (figure 11.3). Fifth, because relative real unit labor costs can only change modestly in a given year, the same is likely to apply to the long-run trend of real exchange rates (shorter run factors are discussed later). For example, if relative real unit labor costs of a country happened to rise by 3% over some interval, then a relative inflation rate of 40% would imply a nominal depreciation of about 37%. In this way, (relative) PPP would appear to be a good approximation in the particular case of high inflation countries (table 11.4). Sixth, free trade is beneficial to a country only when it is strong enough to stand up to international competition. This is precisely the proposition that orthodox economists such as Krugman and Obstfeld (Krugman and Obstfeld 1994, 20) dismiss as a "myth." Finally, of great practical importance to policy, the classical approach allows us to distinguish between two basic routes to increasing a country's international competitiveness: (1) the high road that operates by continuously improving productivity; and (2) the low road that seeks to depress real wages and shift the burden of adjustment onto the backs of workers. The key point here is that rising productivity is compatible with rising real wages, even in the extreme case in which the latter rise faster than the former, so long as overall costs in the export industries are low enough to retain an absolute advantage.

The path from a theory of real exchange rates to a theory of the trade balance involves several further steps which can only be sketched here. Consider the fact that over the last three decades Japan has run a trade surplus while the United States has run a rising deficit (figure 11.2, panels 1 and 4). Yet over this same interval the Japanese real exchange rate has risen somewhat and the US rate declined modestly (figure 11.3). We have shown that these patterns are driven by corresponding changes in relative real unit costs (figures 12.6 and 12.7). Then how does one explain the maintenance of a Japanese surplus in the face of a deterioration of its competitive position, and a worsening of the US deficit even as its competitiveness has improved?

[18] Krugman argues that the virtue of currency depreciation is that it creates a de facto reduction in real wages by raising the prices of imported goods, at least for some time (Krugman, 2011).

The first thing to note is that real exchange rates (and relative real unit labor costs on the other side of equation (11.16)) are based on price indexes so they provide no evidence on the relative levels of these variables. Hence, we can only address the trend, not the level, of each country's competitive advantage. This is important, because the competitiveness of a country will normally encompass a mixture of competitive advantages and disadvantages, and without information on cost levels we cannot analyze the absolute sizes of either. It is obvious, for instance, that Chinese costs of production are much lower than those in the United States. But having started at rock bottom, they have room to rise relative to US costs (as they have been doing) while still remaining considerably below them. Third, aggregate exports and imports also depend on the income of a country relative to its trading partners, and we know that a country's trade balance often worsens when its relative income rises because this pulls in more imports. Given the limitations of our data we can only expect that a fall in a country's real exchange rate would improve its balance of trade, while a rise in its relative income would worsen it (Shaikh 2000/2001). Figure 11.7 displays the main variables for the United States, and we see that the real exchange rate and relative GDP do indeed pull in opposite directions. It follows that the observed deterioration of the US trade balance is consistent with the observed improvement in its average competitive level.

One last point is particularly relevant. The massive trade deficit of the United States over the last thirty years has been accompanied by a growing chorus of commentators who seek to place the blame on US trading partners, most notably China, just as in an earlier time others had targeted Japan and Germany. It is said that the problem stems not from the reduced international competitiveness of the United States, but

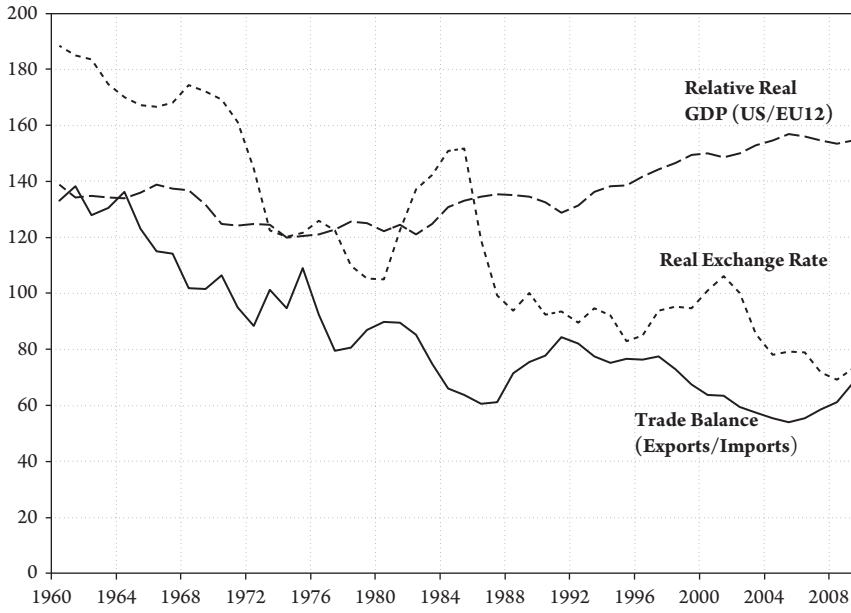

Figure 11.7 US Balance of Trade, Real Exchange Rate, and Relative GDP, 1960–2009

rather from the manipulation of exchange rates by more successful trading partners. This claim is not based on any direct evidence, but rather on an inference derived from standard international trade theory. Since the latter predicts that free trade will automatically lead to balanced trade, the large and persistent US deficit must be rooted in some obstacles to free trade. The large surpluses of some US trading partners such as China then make them natural candidates for opprobrium. Of course, if the standard theory is incorrect, this line of inference collapses. From the classical point of view, free trade does not automatically eliminate trade imbalances. On the contrary, it reflects imbalances in international competitiveness.

In a recent article on China, David Leonhardt (2010) says that "there is ... no question that China's currency remains undervalued" because "the huge demand for Chinese goods should be driving up the price of its currency." Since China's large trade surplus has not driven up its exchange rate, he concludes that "Beijing has been intervening to prevent that." Note that this explicitly relies on the standard theory. Leonhardt also cites estimates of the extent to which China's exchange rate is supposedly undervalued. Yet all such estimates are also derived from models based on standard theory. Paul Krugman takes the same stance, accusing China of obstructing the "automatic mechanisms" of international trade which would otherwise bring about automatic balance (Krugman 2007, 2010a, b, c). As a renowned trade theorist in his own right, Krugman explicitly links his inference to the underlying expectation that free trade will automatically lead to balanced trade—a proposition which he has elsewhere called a "sacred tenet" of standard theory.

It is precisely this sacred tenet that the classical approach disavows. Trade imbalances are perfectly normal, at both theoretical and empirical levels. This does not exclude the possibility that China intervenes to lower its exchange rate below the free market level. It is just that we cannot simply deduce this from the existence of the Chinese trade surplus with the United States. In real international competition, there are always winners and losers.