Forum for Macroeconomics and Macroeconomic Policies

IMK Macroeconomic Policy Institute

The IMK is an institute of the Hans-Böckler-Stiftung

FMM WORKING PAPER

No. 119 • September 2025 • Hans-Böckler-Stiftung

CONFLICT AND COOPERATION IN INTERNATIONAL TRADE: POST-KEYNESIAN PERSPECTIVES

Robert A. Blecker[1]

ABSTRACT

The revival of economic nationalism poses a challenge to neoclassical orthodoxy, which claims that liberalized international trade is (subject to a few recognized exceptions) inherently cooperative and mutually beneficial. Post-Keynesian open economy models demonstrate that international trade relations can be conflictive under certain conditions. In the short run, changes in either cost or quality competitiveness can shift output, growth, and employment from some countries to others. In the medium run, positive feedbacks from growth of exports to growth of labor productivity create self-reinforcing gains in external competitiveness for some countries that may come at the expense of losses for others. In the long run, changes in the real exchange rate or terms of trade can favor some countries' growth at the expense of others'. The post-Keynesian approach also implies that coordinated fiscal expansions can mitigate these conflicts and foster more cooperative outcomes, while industrial policies are generally superior to protectionism.

[1] Professor Emeritus of Economics, American University, Washington, DC, USA; FMM Fellow. Email: blecker@american.edu.

Conflict and cooperation in international trade: post-Keynesian perspectives

Robert A. Blecker*

September 2025

Abstract

The revival of economic nationalism poses a challenge to neoclassical orthodoxy, which claims that liberalized international trade is (subject to a few recognized exceptions) inherently cooperative and mutually beneficial. Post-Keynesian open economy models demonstrate that international trade relations can be conflictive under certain conditions. In the short run, changes in either cost or quality competitiveness can shift output, growth, and employment from some countries to others. In the medium run, positive feedbacks from growth of exports to growth of labor productivity create self-reinforcing gains in external competitiveness for some countries that may come at the expense of losses for others. In the long run, changes in the real exchange rate or terms of trade can favor some countries' growth at the expense of others'. The post-Keynesian approach also implies that coordinated fiscal expansions can mitigate these conflicts and foster more cooperative outcomes, while industrial policies are generally superior to protectionism.

Keywords: *Economic nationalism, export-led cumulative causation, international conflict, real exchange rate, trade balance*

JEL codes: *F43, E12, O41, B52*

*Professor Emeritus of Economics, American University, Washington, DC, USA. Email: blecker@american.edu. Portions of this paper are based on presentations the author gave at the 27th Conference of the Forum for Macroeconomics and Macroeconomic Policies (FMM), Berlin, Germany, October 2023, and the 5th International Workshop on Demand-Led Growth, Universidade Federal de Rio de Janeiro (UFRJ), Brazil, July 2024. The author is indebted to Eric Hershberg, Will Milberg, and an anonymous reviewer for helpful comments on an earlier draft; the usual caveats apply.

1 INTRODUCTION

Even before US president Donald Trump launched his chaotic and punitive new trade war in 2025, the liberal international trade regime of the post-World War II era was already being challenged by a revival of economic nationalism and the increasing use of industrial policies, both in the US and globally (de Bolle et al., 2025; Juhász et al., 2024; Juhász et al., 2025; Reinert, 2025). One key event in this shift was the Brexit vote in the UK in 2016. In the US, Trump withdrew the country from the Trans Pacific Partnership (TPP), engineered a nationalistic rewrite of the North American Free Trade Agreement (NAFTA), and imposed various (in retrospect, more moderate) tariffs during his first term in 2017–2020. Under president Joe Biden, the US adopted several key pieces of industrial policy legislation in 2021–2024, including the CHIPS and Science Act and Inflation Reduction Act (which included significant investments in clean energy), while leaving most of Trump's earlier tariffs (especially those on China) in place.

Among economists, most responses to these trends have emphasized conventional calculations of the consumer costs of protection and called for a restoration of the "rules-based" liberal trading order founded upon multilateral trade negotiations (e.g., Clausing and Lovely, 2024; Reinert, 2025; Shenai and Meltzer, 2025). These critiques of the new protectionism and industrial policy assume the optimality of free trade, which implies that unfettered trade relations are fundamentally cooperative and mutually beneficial for all nations. Hence, the new interventions, including tariffs, subsidies, and other industrial promotion efforts, are seen as inherently irrational and inefficient, leading to higher costs for private agents (households and firms) without generating any social benefits.

Of course, there is much that *is* irrational and costly in many of these new policies, especially Trump's unilateral and erratic tariff decisions—which seem designed, more than anything else, to maximize his own opportunities for self-promotion, bullying, and "deal-making." Baldwin (2025) argues persuasively that Trump's new tariff policy represents a "hack" of the global trading system motivated by a political "Grievance Doctrine," rather than the pursuit of coherent economic goals.

This leaves open the question of whether the broader trend toward economic nation-

alism and industrial policy may—in spite of the irrational ways in which it is sometimes expressed—have a rational foundation in inherent conflicts over national economic objectives that can potentially be exacerbated by international trade relations. de Bolle et al. (2025, p. 2) argue that economic nationalism is founded upon "an alternative vision centered on the idea of conflict between national and foreign economic interests." This paper argues that the theoretical foundations for a vision of inherent conflict in international trade relations can be found in heterodox economic theory, especially the post-Keynesian approach. The paper provides a survey of relevant post-Keynesian models, with emphasis on how they show that international trade relations can be dis-equalizing or conflictive.

Many of these models reflect the view that national economies are usually in competition with each other for opportunities for export-led growth in a global economy in which demand is normally the chief constraint. Robinson (1978, p. 204) described this competition for global market shares as "the new mercantilism":

> the capitalist world is still always somewhat of a buyer's market, in the sense that capacity to produce exceeds what can be sold at a profitable price.... The chronic condition for industrial enterprise is to be looking round anxiously for prospects of sales. Since the total market does not grow fast enough to make room for all, each government feels it a worthy and commendable aim to increase its own share in world activity for the benefit of its own people.

Kaldor (1970, 1971) theorized that the positive feedbacks that flow from rapid growth of exports to more rapid growth of labor productivity and enhanced competitive advantages imply that the success of some countries comes at the expense of failure for others. The potential for trade relations to be conflictive is also recognized in neo-Kaleckian models for the short run and some extended versions of Thirlwall's balance-of-payments-constrained growth model for the long run (Blecker, 1999, 2022). In a more classical vein, Pasinetti (1981) showed that changes in the terms of trade can redistribute the income gains from productivity growth between nations, when productivity growth is more concentrated in specialized export sectors relative to the rest of the economy in one country compared to another.

Before proceeding further, some important caveats are in order. First, we do not mean to imply that trade issues are the sole or most important reason for the rise of economic nationalism and populism more generally. These phenomena also have other roots that have often been more salient politically, including concerns over national security, immigration, inequality, and economic insecurity more broadly, not to mention "culture wars" issues and associated resentments. Our focus on the potential for international trade relations to be conflictive is not intended to rule out these other aspects of the political shift toward greater nationalism and populism.

Second, the views about international conflict discussed here should not be equated with the mercantilist fallacies that trade is a zero-sum game and that countries with trade deficits lose absolutely from trade. In post-Keynesian and other heterodox models, countries can lose in certain specific respects, for example by experiencing slower growth of output and productivity *relative* to other nations, but this does not mean that they gain nothing from their trade. Pasinetti (1981, 1993) explicitly recognized that countries can get one-time, comparative static gains from trade by specializing according to their comparative advantages, provided that they prevent unemployment from increasing and utilize the best productive techniques available at the time. Nevertheless, he also argued that such gains are dwarfed by the potentially much larger gains from "international learning" (technology transfer and knowledge diffusion) in the long run.

Third, we do not in any way endorse Trump's abuse of US tariff policy to engage in "shakedowns"[1] of US trading partners or as the primary means to revitalize US manufacturing. For the latter objective, more appropriate and effective policy measures would include industrial, technological, educational, and fiscal policies, rather than protectionist barriers (although tariffs could be deployed in limited and targeted ways for strategically important sectors in combination with other policies). Furthermore, post-Keynesian and other dissenting views do not imply that international conflict over the gains from trade is inevitable or that protectionist solutions are desirable. Post-Keynesian analysis also highlights opportunities for more productive and cooperative policy responses. But it

[1] US Secretary of Commerce Howard Lutnick is reported to have used this word in describing Trump's approach to negotiating trade deals by Hitchens (2025).

recognizes that there is an underlying foundation to tensions in international trade relationships, and that a purely laissez-faire approach to trade is not generally the best option.

The rest of this paper is organized as follows. Section 2 discusses mainstream perspectives and heterodox critiques. Section 3 covers alternative models from the post-Keynesian tradition, organized by the analytical time frame (short, medium, and long run). Section 4 discusses alternative visions of cooperative policy responses. Section 5 concludes.

2 NEOCLASSICAL VIEWS AND CRITIQUES

2.1 Orthodox trade models and extensions

Orthodox theories of international trade, from Ricardian to Heckscher-Ohlin, hold that all countries gain by specializing according to their respective comparative advantages. The free-trade equilibrium is efficient, in the sense that it allows all goods to be produced wherever the opportunity cost is lowest. Representative consumers in all nations benefit maximally from free trade, in the sense that they can achieve the most preferred consumption bundles that are feasible, taking as given the resources and technology of their own countries relative to their trading partners, as well as the distribution of resource "endowments" and the "preferences" of domestic consumers. In this sense, international trade relations are inherently cooperative and mutually beneficial, and policy interventions that move a country away from the free-trade equilibrium are generally seen as welfare-reducing.

This optimistic view of free trade rests upon a number of strong assumptions, including: full employment of all resources; balanced trade; constant returns to scale; perfectly competitive markets for goods and factors; exogenously given tastes, technology, and factor endowments; free mobility of labor and other factors between sectors; and the absence of market failures such as externalities. It is well-known that the optimality of free trade may break down when any of these assumptions are violated, although in most cases the optimal policy intervention is something other than a tariff. For example, a production

tax-cum-subsidy is the "first best" response to a pure production externality (Bhagwati et al., 1998, pp. 301–305).

Some limited modifications of these assumptions still support the optimality of free trade. Trade models that assume economies of scale (internal to the firm) and monopolistic competition show additional types of gains from trade not found in models of comparative advantage. In Krugman (1979), assuming that firms produce differentiated goods using identical technology (cost functions) with free entry, these gains consist of higher labor productivity, increased real wages, and a greater number of varieties available for consumers. In Melitz (2003), making otherwise similar assumptions but allowing for heterogeneity in firms' cost functions and including fixed costs of entry to both domestic and foreign markets, trade results in a "selection effect": only the most efficient firms can compete and survive given the higher fixed costs of remaining in the market after an opening to trade, resulting in a rise in average productivity. These models implicitly recognize adjustment costs for workers who lose jobs in firms that "exit," but then sweep them away by assuming full employment so that those workers easily and costlessly get new jobs in the surviving firms.

An exception that is recognized in the orthodox literature is that a tariff (or, equivalently, an export tax) *is* the nationally optimal policy for a large country, defined as one big enough to turn the terms of trade in its favor by restricting its imports (or exports).[2] Trade relations become conflictive when a large country adopts an "optimal tariff," as foreign nations end up paying part of the cost of the tariff and have an incentive to impose retaliatory tariffs—which can eliminate the gains to the tariff-imposing country. Free trade remains the *globally* optimal policy regime even in the presence of one or more large countries, as it guarantees an efficient allocation of world resources; even if one country "wins" a trade war of tit-for-tat tariffs (which is theoretically possibly, but not guaranteed), its gains are smaller than the losses imposed on the rest of the world (Bhagwati et al., 1998, pp. 293–296). Nevertheless, the presence of one or more large countries in

[2]The optimal tariff for a large country is covered by Bhagwati et al. (1998, pp. 289–292) and Feenstra (2016, pp. 221–224). The equivalence of import tariffs and export taxes was demonstrated by Lerner (1936).

the global economy creates a potential for trade relations to become conflictive.

The other major qualification to the orthodox case for free trade is the likelihood of redistributive effects *within* nations. According to the theorem of Stolper and Samuelson (1941), in a Heckscher–Ohlin model, the real wage or rental rate of the scarce factor of production is lower in a free-trade equilibrium compared with autarky, and owners of the scarce factor benefit from a tariff. Moreover, if the scarce factor is labor (especially so-called "less-skilled" labor) while the abundant factor is capital or land (or more-skilled labor), then free trade exacerbates inequality in the distribution of income, assuming that workers have lower incomes than capitalists or landowners (or less-skilled workers compared with more-skilled ones) to begin with.[3]

Newer models of trade with heterogeneous firms and workers imply additional mechanisms through which trade liberalization can exacerbate inequality, between either profits and wages or the wages of different strata of the labor force. De Loecker and Warzynski (2012) found that entry into exporting selects for firms that have higher profit markups and are able to increase them after exporting. Other studies have found that an opening to trade increases wage inequality if it selects for firms that have more capable managers, higher productivity, and higher profits, or are more intensive in the use of high-skilled labor (Egger and Kreickemeier, 2012; Harrigan and Reshef, 2015). Autor et al. (2016) and Hakobyan and McLaren (2016) report empirical evidence that trade liberalization episodes have caused significant losses of jobs and wages that are concentrated among less-skilled workers in the local areas most exposed to the types of imports for which trade barriers were reduced (or foreign export capacity increased).

All of these analyses recognize that trade can foster conflict between domestic economic agents or social classes who stand to gain or lose from trade liberalization, but they do not imply international conflict per se. As long as the gains to the winners exceed the losses to the losers within each country, the conventional response is to advocate the adoption of adjustment assistance and/or redistributive policies while enjoying the aggregate benefits

[3]An extended Stolper–Samuelson theorem incorporating flexible markup pricing shows that "trade liberalization raises mark-ups and profit shares in the export industry and lowers them in the import-competing industry, while [traditional] Stolper–Samuelson effects on real prices of primary factors are attenuated or possibly reversed" (Blecker, 2012, p. 569).

of free trade. Nevertheless, these analyses do help us to understand why "populist" policies, such as Brexit and Trump's tariffs, resonate with substantial blocks of voters. Empirical research shows that trade shocks like China's entry into the global economy and NAFTA tariff reductions have had a lasting impact on US electoral outcomes, tilting them in the Republicans' favor (Autor et al., 2020; Choi et al., 2024) at the same time as the Republican Party has shifted in a protectionist direction.

2.2 Heterodox Critiques and Alternatives

Post-Keynesians and other critics of orthodox trade models have long rejected all or most of the assumptions that undergird the neoclassical view. According to these critics, the real world of trade is typically characterized by some or all of the following: underutilization of productive capacity and involuntary unemployment of labor; chronic trade imbalances sustained by large net financial flows; economies of scale, both static and dynamic, and both internal and external to firms; oligopolistic or monopolistic industrial structures, including powerful multinational corporations and monopolization of intellectual property; endogenous consumer preferences ("demonstration effects"), technological change, and capital accumulation; structural immobility of substantial segments of the labor force; and significant externalities in both production (spillovers, learning effects) and consumption (including ecological effects) as well as other market failures (e.g., missing public goods). In such a world, as Robinson (1978, p. 205) wrote, "The beautiful harmony of the free-trade model is far indeed to seek."

Post-Keynesians in particular have long trained their fire on the orthodox assumption of an automatic monetary adjustment mechanism that keeps trade balanced, as originally postulated by Hume (1752) and Ricardo (1821), as well as the assumption of full employment, which dates back to Smith (1776). Without these twin assumptions, increasing net exports can potentially raise employment, contrary to the orthodox presumption that trade merely reallocates labor from less (marginally) productive uses to more productive ones. Hence, as recognized by Keynes (1936) and Robinson (1947), mercantilist policies that aim to boost exports and/or reduce imports can potentially increase employment in

one country at the expense of others (unless the others retaliate).

Post-Keynesians have also elaborated on the original insight of Keynes (1980) that the burden of adjustment to trade imbalances usually falls disproportionately, if not entirely, on the countries that have chronic current account deficits. Assuming that BOP adjustment takes place primarily through changes in national income rather than relative prices, deficit countries are forced to contract when they encounter difficulties in borrowing from abroad to finance their deficits on current account, whereas surplus countries are not forced to expand because they face no limits on their ability to lend their excess saving abroad. This asymmetrical burden of adjustment then imparts a contractionary bias to the global economy as a whole (Davidson, 1992; Blecker, 2025a). It also sets up a conflict between debtor and creditor countries, if the latter refuse to adopt the expansionary demand policies that would be necessary to make the adjustment less painful for the former.[4]

Critics of orthodox trade models have also assailed the comparative static nature of analyses that focus solely on the efficiency properties of a free-trade equilibrium, assuming exogenously given technology and resources. As argued long ago by Williams (1929, p. 196),

> the relation of international trade to the development of new resources and productive forces is a more significant part of the explanation of the present status of nations, of incomes, prices, well-being, than is the cross-section value analysis of the classical economists, with its assumption of given quantums of productive factors, already existent and employed.

In the long run, the impact of trade on the evolution of national economies—transferring technology, relocating labor and capital, altering industrial structures, and transforming consumption patterns and social relationships—is far more significant than the short-run

[4]This asymmetry has weakened since the 1980s, as the country with the world's largest deficits and debts (the US) is also the emitter of the world's main reserve currency and its government debt has been seen—at least until the second Trump administration—as a completely safe asset for foreign investors. The almost unlimited ability of the US to borrow internationally has allowed the country to sustain perpetually large external deficits and to serve as a major source of global demand stimulus. The resulting chronic trade imbalances have, however, also contributed to resentments that have exploded in Trump's misguided effort to eliminate those deficits by imposing high tariffs.

efficiency gains from exchange conducted according to comparative advantage.

Pasinetti encapsulates these concerns with his emphasis on international learning and by stressing that the gains from trade are conditional on avoiding losses in employment. He argues that it is only "when all possible efforts have been made to improve technology, and when employment is being preserved (or unemployment is prevented from increasing, [that] international trade will bring real gains to both countries" (Pasinetti, 1981, p. 255). In general, he sees the efficiency gains from trade as strictly "a secondary source of international gains" (Pasinetti, 1981, p. 255) compared to international learning. Pasinetti leaves open the question of how international learning can best be pursued, especially by less developed countries, but his analysis would seem to support the use of carefully designed industrial policies[5] to promote infant industries, provided that the long-run benefits from learning outweigh the short-run costs in efficiency or consumer welfare.

3 POST-KEYNESIAN MODELS OF TRADE AND CONFLICT

For presenting the post-Keynesian models, it is helpful to distinguish them by the analytical time frame to which they apply: a short run, in which labor costs (wages and productivity) are exogenously given; a medium run, in which wages and productivity adjust dynamically; and a long run, in which certain conditions for steady-state or sustainable growth must hold.[6] We shall consider examples of models that can help us to understand conflict in international trade relations in each of these time frames. All of the models covered here assume that home and foreign goods are imperfect substitutes.

[5]Juhász et al. (2024, p. 216) define industrial policies as "those government policies that explicitly target the transformation of the structure of economic activity in pursuit of some public goal. The goal is typically to stimulate innovation, productivity, and economic growth, but it could also be to promote climate transition, good jobs, lagging regions, exports, or import substitution." These policies may include various kinds of subsidies (including tax incentives), exemptions from regulations, public provision of inputs (including labor training as well as more traditional infrastructure), regional promotion efforts, and technology or innovation policies, as well as tariffs and other trade interventions.

[6]These definitions are similar to those of Ribeiro et al. (2017), who call the intermediate time frame the "medium-to-long run." Some economists in the classical and Marxian traditions prefer the term "long period" to long run.

3.1 The short run: international competition in neo-Kaleckian models

For present purposes, the short run is defined as a period in which nominal wages can be taken as exogenously given through labor contracts, and the underlying technology, productive capacity, and structure of industry (degree of monopoly or competition) are also fixed. We will consider two short-run models here, both in the tradition of neo-Kaleckian theory (see Blecker and Setterfield, 2019, pp. 158–204). The first is a model of two large countries competing over opportunities for profit realization in a demand-constrained global economy. The second is an open economy model for a single country, in which the competitive effects of the real exchange rate on net exports affect whether demand is wage-led or profit-led.

The two-country model, based on Blecker (1999), extends the original work of Kalecki (1942) on the profit multiplier and Kalecki (1968, p. 49) on the profit identity for an open economy. The equilibrium condition that national income must equal aggregate demand for the home country is

$$Y = W + R + T = C + I + G + X - (RER \cdot M) \tag{1}$$

where Y is income or output,[7] W is after-tax wages, R is after-tax profits, T is tax revenue, C is consumption, I is investment, G is government purchases, X is exports, M is imports (measured in foreign goods), $RER = EP^*/P$ is the real exchange rate (relative price of foreign goods), E is the nominal exchange rate in home/foreign currency, P is the price level, a superscript * indicates a foreign variable, and $[X - (RER \cdot M)]$ is the trade balance (net exports of goods and services)[8] measured in domestic goods. The corresponding equilibrium condition for the foreign country is

$$Y^* = W^* + R^* + T^* = C^* + I^* + G^* + X^* - (M^*/RER) \tag{2}$$

[7] Assuming no net international transfers or income flows for simplicity, national income is equal to domestic output.

[8] Throughout this article, we use the terms "net exports" and "trade balance" interchangeably. The terms "surplus" and "deficit" refer to the trade balance (net exports), unless otherwise stated.

where analogous definitions apply and the trade balance is measured in foreign goods.

The home and foreign price levels are determined by markups on unit labor costs, $P = (1+\tau)w/A$ and $P^* = (1+\tau^*)w^*/A^*$, where $\tau, \tau^* > 0$ are the (gross, pre-tax) markup rates, w and w^* are nominal wage rates in local currencies, and A and A^* are labor productivities (output per worker-hour). Assuming no overhead labor or raw materials costs for simplicity, (gross, pre-tax) profit shares are uniquely and positively related to markup rates: $\pi = \tau/(1+\tau)$ in home and $\pi^* = \tau^*/(1+\tau^*)$ in foreign. The real exchange rate therefore equals

$$RER = \frac{EP^*}{P} = \frac{(1+\tau^*)Ew^*/A^*}{(1+\tau)w/A} = \frac{1+\tau^*}{1+\tau} RULC^* \tag{3}$$

where $RULC^* = Ew^*A/wA^*$ is relative unit labor cost (foreign/home). A rise in E is a nominal depreciation of the home currency (appreciation of the foreign), while an increase in RER is a home real depreciation (foreign real appreciation) indicating an improvement in home competitiveness relative to foreign, and conversely. Taking markup rates as given for purposes of this model, changes in RER are entirely driven by changes in $RULC^*$.

On the domestic income-expenditure side, the home country is characterized by the following equations. The consumption function is

$$C = c_w W + c_r R \tag{4}$$

where c_w and c_r are marginal propensities to consume out of after-tax ("disposable") wage and profit income, with $1 \geq c_w > c_r > 0$, while after-tax wages and profits are given by

$$W = (1-t_w)(1-\pi)Y \tag{5}$$

$$R = (1-t_r)\pi Y \tag{6}$$

where t_w and t_r are the tax rates on wage and profit income, respectively.

The investment function is

$$I = I_0 + b_1 R + b_2 Y \tag{7}$$

where I_0 is autonomous investment, b_1 is the profitability effect, and b_2 can be called the accelerator effect.[9] Tax revenue is

$$T = [t_w(1 - \pi) + t_r \pi]Y \tag{8}$$

while government spending G is exogenously given.

The foreign country is characterized by equations analogous to (4) to (8), with *'s on all variables and parameters. Home import demand is given by

$$M = M_0 + m_1 Y - m_2 RER \tag{9}$$

while foreign import demand is

$$M^* = M_0^* + m_1^* Y^* + m_2^* RER \tag{10}$$

where M_0 and M_0^* are intercepts (shift factors), which could represent qualitative advantages of imported goods, m_1 and m_1^* are marginal propensities to import, m_2 and m_2^* are the effects of price competitiveness, and both functions are linearized for mathematical convenience. Separate export functions are not given, because exports of each country must equal the imports of the other: $X = M^*$ and $M = X^*$.

Following in the spirit of Kalecki's profit multiplier, the model can be solved for each country's profits as a function of the other's, along with autonomous expenditures and the various parameters (all of which are assumed to be positive). For home, this relationship

[9] A true accelerator would be the effect of output growth, $g_Y = \Delta Y/Y$. A positive effect of the level of output is the static equivalent, used here for mathematical convenience. For various perspectives on the theory and empirics of the investment function, see (among many others) Steindl (1952), Minsky (1986, pp. 191–245), Marglin and Bhaduri (1990), Mott and Slattery (1994a), and Chirinko et al. (1999, 2011).

is

$$R = \frac{(1-t_r)\pi\left[I_0 + G + M_0^* - M_0 + (m_2 + m_2^*)RER + m_1 R^*/(1-t_r^*)\pi^*\right]}{s(\pi) - b_1(1-t_r)\pi - b_2 + m_1 RER} \tag{11}$$

where $s(\pi) = 1 - c_w(1-t_w)(1-\pi) - c_r(1-t_r)\pi$ is the marginal propensity to save out of total income (one minus a weighted average of the after-tax marginal propensities to consume out of wages and profits), $0 < s(\pi) < 1$, $s'(\pi) > 0$, and the denominator must be positive to satisfy the goods market stability condition. The parallel equation for foreign profits is

$$R^* = \frac{(1-t_r^*)\pi^*\left[I_0^* + G^* + M_0 - M_0^* - (m_2 + m_2^*)RER + m_1^* R/(1-t_r)\pi\right]}{s^*(\pi^*) - b_1^*(1-t_r^*)\pi^* - b_2^* + m_1^*/RER} \tag{12}$$

where analogous definitions and conditions hold.

These two profit equations are shown as the upward-sloping RR and R^*R^* lines in Figure 1. Intuitively, the slopes are positive because profits in each country are driven by aggregate demand and the output (income) level, and as these rise in either country, its demand for imports increases, thereby raising exports of the other country and increasing realized profits in the latter (but to a lesser extent than in the first country, hence RR is flatter than R^*R^*). The intersection of these two lines determines equilibrium (realized) profits for both countries, denoted by point H_0. The dashed line BB represents the locus of profit levels (R, R^*) that are consistent with balanced trade. For analytical purposes, we assume that the initial equilibrium point H_0 lies on the the balanced trade line. If the equilibrium point were above and to the left of BB, there would be a home deficit and foreign surplus, and conversely if the point were below and to the right.

Although we have solved the model in terms of profits, it is important to note that output and employment are proportional to profits in this model. Using the home country as an example, the (gross, pre-tax) profit share can be written as $\pi = (1 + t_r)R/Y$,[10]

[10]Recall that, on the assumption of a constant (gross) markup rate, the profit share is also held constant at $\pi = \tau/(1+\tau)$. Therefore, if there is an increase in the tax rate t_r, π does *not* increase; rather, the ratio of net (after-tax) profits to output (R/Y) must fall to prevent π from changing. In effect, this means we are assuming that all taxes on profits are paid entirely by capitalists. For a broader analysis of tax incidence in a Kaleckian framework, see Mott and Slattery (1994b).

which implies that $Y = (1 + t_r)R/\pi$. Furthermore, since labor productivity is defined as $A = Y/N$, where N is employed worker-hours, then employment is also positively related to profits: $N = Y/A = (1+t_r)R/(\pi A)$. Thus, if we take the profit share π (which depends only on the markup rate τ), productivity A, and the tax rate on profits t_r as exogenously given,[11] output Y and employment N will vary in proportion to profits R. Analogous relationships hold in the foreign country.

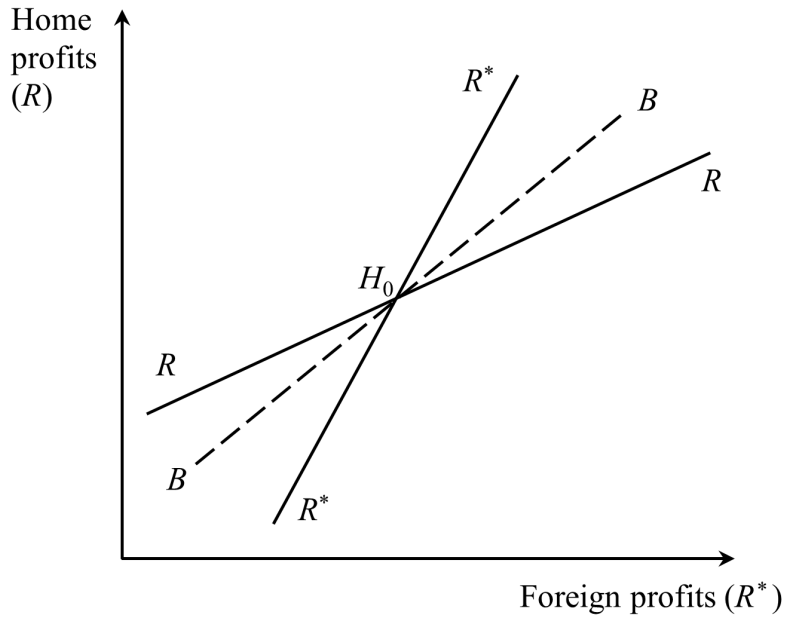

Figure 1: Home and foreign profits in a two-country neo-Kaleckian model

The comparative static effects of a competitive devaluation in this model are quite striking. Suppose there is a real depreciation of the foreign currency (fall in RER), for example, because of a foreign nominal depreciation (decrease in E) or a reduction in foreign unit labor cost (w^*/A^*) due to increased productivity and/or wage suppression. Holding all other factors constant in each case, both RR and R^*R^* shift down and to the right, to the dashed lines $R'R'$ and $R^{*\prime}R^{*\prime}$ shown in Figure 2. Under plausible parameter restrictions,[12] the new equilibrium point H_1 lies down and to the right of H_0, indicat-

[11]Both π and A become endogenous in short-run Kaleckian models if the fixed costs of overhead labor are taken into account (see Blecker and Setterfield 2019, pp. 205–207; Lavoie 2022, pp. 346–348, 356–357). We exclude these here since we are not focusing on cyclical fluctuations in these variables.

[12]The sum of the first three terms in the numerators of equations (11) and (12) must be positive, or intuitively, the marginal effect of a rise in output (income) on saving must exceed the marginal impact

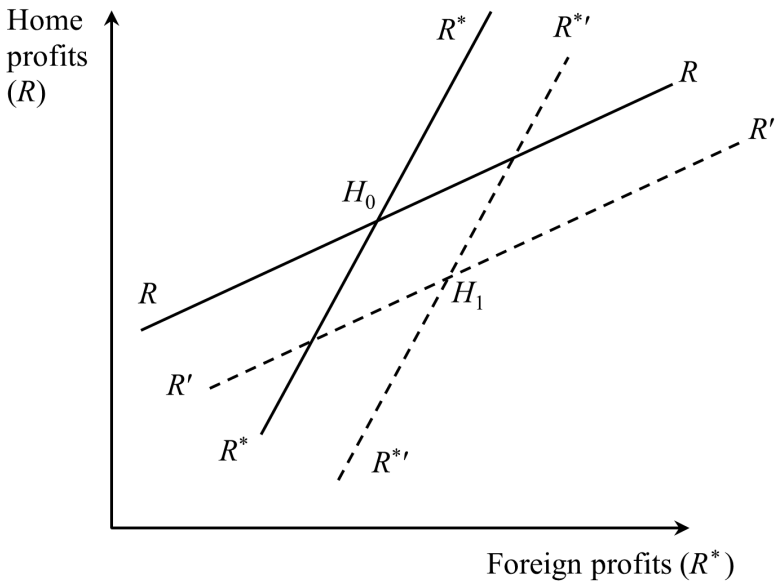

Figure 2: Effects of a foreign competitive devaluation in the two-country neo-Kaleckian model

ing that foreign profits have increased while home profits have decreased. By the logic discussed above, output (income) also falls in home and rises in foreign. Employment definitely decreases in home, and increases in foreign *unless* the increase in output there is outweighed by an increase in productivity.

Assuming that the Marshall–Lerner condition is satisfied,[13] net exports will decrease in home and increase in foreign. If the two countries start out with balanced trade, as at point H_0 in Figure 1, home will end up with a trade deficit while foreign will end up with a surplus. More generally, home ends up with a lower trade balance while foreign ends up with a higher one, as a result of the foreign real devaluation. This does not negate the fact that the country that has lost competitiveness (home) continues to get micro-level gains from trade (in fact, its imports are cheaper when its currency has appreciated), but

on investment. This is essentially the goods market stability condition, *omitting* the marginal propensity to import in both countries.

[13]This is the condition for a real depreciation to improve the trade balance, starting from balanced trade. It requires that absolute value of the sum of the price elasticities of demand for exports and imports is greater than unity:

$$|\varepsilon_x + \varepsilon_m| = \frac{m_2^* RER}{X} + \frac{m_2 RER}{M} > 1.$$

at the macro level it experiences reduced profits, output, income, and employment as a result of the other country's competitive devaluation.

It is important to this result that the changes in net exports originate from an independent shock to competitiveness (the change in $RULC^*$) and not from other factors. For example, if a reduction in home net exports (a bigger trade deficit) is driven by expansionary fiscal policies (a rise in G), then profits, income, and employment would rise in *both* countries (the impact would be bigger in home, but still positive in foreign). On the other hand, it is *not* essential that the shock must involve a relative price (RER) effect. If there is a qualitative improvement in foreign competitiveness,[14] such that foreign exports (home imports) increase exogenously, the shift factor M_0 in equation (9) would rise and the effects would be qualitatively similar to those shown in Figure 2. The impact of the "China shock" of the early 2000s on the US economy (Autor et al., 2016) could be a case in point.

Further insights into conflict in trade relations come from a neo-Kaleckian model for a single open economy, which highlights how international competition affects whether the country's demand regime is wage-led or profit-led.[15] This model, first developed by Blecker (1989), assumes that the profit markup τ becomes flexible in response to international competitive pressures, rising when domestic products are more internationally competitive (RER rises) and falling when they become less competitive (RER falls):

$$1 + \tau = (1 + \overline{\tau})RER^{\theta} \tag{13}$$

where $\overline{\tau}$ is a target markup of firms reflecting the underlying degree of monopoly and $\theta > 0$. In this case, an increase in unit labor cost the home country (taking foreign prices and the exchange rate as given) is not fully passed through to consumers, but rather "squeezes" home firms' markups and hence reduces the profit share.

After substituting the markup pricing equation and holding P^* and E constant,

[14] For empirical evidence that both relative prices and qualitative competitiveness matter to export performance, for different kinds of goods and countries, see Bottega and Romero (2021) and Pariboni and Paternesi Meloni (2025).

[15] Our presentation here will be mainly intuitive. The interested reader is referred to Blecker and Setterfield (2019, pp. 190–197) and Blecker et al. (2022) for recent versions of the mathematical details.

the profit share is determined by two underlying (exogenous) factors: the ratio $\lambda = EP^*/(w/A)$ reflecting home country labor cost competitiveness (a variable that plays the same role as $RULC^*$ plays in the two-country model); and the target markup $\overline{\tau}$ reflecting domestic firms' monopoly power.[16] We will focus here on the effects of shocks to λ, which are especially relevant to whether international trade relations are conflictive and how international competition interacts with domestic distributional conflict.

The structure of the domestic economy is specified in a manner qualitatively similar to equations (4) to (7).[17] Net exports ($NX = X - (RER \cdot M)$) are assumed to be an increasing function of RER (assuming that Marshall–Lerner holds[18]) and a decreasing function of home country income (increases in which raise import demand). The core intuition can be seen using the equilibrium condition that national income (domestic output) must equal aggregate demand:

$$Y = \underset{-}{C} + \underset{+/-?}{I} + G + \underset{+?}{NX} \tag{14}$$

where the signs under the components of aggregate demand indicate the direction of the effects of a rise in the home country profit share π, assumed to result from a rise in λ that allows home firms to raise their markups τ. Specifically, we consider the case where λ rises because of a decrease in nominal home unit labor cost, w/A, holding the nominal exchange rate E and foreign prices P^* constant. Since the markup rises, the profit share $\pi = \tau/(1+\tau)$ also increases.

The negative impact on consumption stems from the assumption of a higher marginal propensity to consume out of wage income compared to profit income, as specified in equation (4). For investment, there is a direct positive impact of higher profitability, as modeled by the b_1 parameter in equation (7). However, there is also a possibly negative indirect impact: if demand is wage-led overall, then a rise in π will reduce Y and lower

[16] Thus, $\pi = \pi(\lambda, \overline{\tau})$, with $\partial\pi/\partial\lambda > 0$, $\partial\pi/\partial\overline{\tau} > 0$. For an extension of the model that incorporates dynamic feedbacks from capacity utilization onto wage bargaining and productivity growth, see Sasaki et al. (2013).

[17] Taxes and government spending are often omitted from this model for mathematical simplicity, but there is no reason they cannot be included.

[18] In this case, the induced changes in the quantities of exports and imports (decreasing X and increasing M) outweigh the lower cost of imports when RER falls, so that net exports decrease.

investment through the accelerator effect, which is the coefficient b_2 in equation (7). Furthermore, it is not even certain that total profits R will increase as a result of a higher profit share π; if the "paradox of costs" (Lavoie, 2022) holds, the fall in output is so great that realized profits $R = (1 - t_r)\pi Y$ actually decrease. Hence, the net impact on investment is ambiguous; it depends on both the relative strength of the profitability and accelerator effects and the character of the overall demand regime.

We assume that there is no impact of a change in π on government spending, since any such effect would be mediated through political processes that are difficult to predict. Net exports are normally expected to increase, because lower home unit labor costs lead to a real depreciation (rise in RER) that makes domestic products more competitive in domestic and global markets, assuming that the Marshall–Lerner condition holds and that the rise in the markup (which is variable in this model) is not big enough to offset the fall in unit labor cost. However, we put a question mark on the positive sign for NX to recognize that Marshall–Lerner may not hold in countries that have rigid (price-insensitive) export or import demand. This is especially likely to be true in countries that export mainly primary commodities, or which lack domestic substitutes for many imported goods.

A wage-led regime is defined as one in which the net effect of a rise in π on output Y is negative, while a profit-led regime is one in which the net effect is positive. Which regime exists in any given economy in any historical period is an empirical question. The empirical literature (surveyed in Blecker and Setterfield, 2019, pp. 235–250) has generally found that large economies (such as the US, Germany, and the EU-12 core countries as a group) have wage-led demand regimes,[19] while many smaller or highly open ones (such as Austria, Canada, China, Ireland, Mexico, and South Africa) have profit-led regimes. Notably, for the vast majority of countries, it is the strength of the competitive effects of a change in income distribution on net exports that that determines whether the demand regime is wage-led or profit-led, as consumption is strongly wage-led in almost all countries

[19]Blecker et al. (2022) find that the US economy had wage-led demand for the entire period 1963–2016 in response to shocks to monopoly power (proxies for $\overline{\tau}$). However, they also find that the US had profit-led demand in response to shocks to labor cost competitiveness (λ) before a structural break in 1981, after which it became weakly wage-led in this respect.

and the effects on investment are usually small or statistically insignificant (Onaran and Galanis, 2012; Blecker et al., 2022). This is contrary to the argument in Marglin and Bhaduri (1990), who put primary emphasis on the relative strength of the profitability and accelerator effects in the investment function as the main determinant of the demand regime.

In regard to international conflict, the key implication of this model is that profit-led economies have a strong incentive to use competitive devaluations to boost their economies in the short run. Those countries can achieve this via either a "high road" (increased productivity) or a "low road" (wage suppression or currency undervaluation), or a combination (for example, strong productivity increases not fully offset by nominal wage increases or currency appreciation). Either way, countries that have profit-led demand can increase their own output (and, most likely, their employment[20]) at the expense of their trading partners, who will suffer reduced aggregate demand and lower output and employment.

A competitive (real) devaluation does not help a wage-led economy to increase its overall output or employment, but still improves its trade balance and benefits tradable goods industries as long as the Marshall–Lerner condition holds. Thus, nations with wage-led demand could adopt a competitive devaluation policy if these were considered worthy policy objectives, but at the possible cost of stagnating overall income growth. A case in point might be Germany, which has wage-led demand (Stockhammer et al., 2011; Onaran and Galanis, 2012), and typically keeps its unit labor costs low relative to other euro zone countries (Keil, 2024; Sturn and van Treeck, 2013). Meanwhile, China and other profit-led economies have had strong incentives to use currency undervaluation, wage suppression, or other mercantilist policies to promote export-led growth in recent decades, creating an underlying source of tension in trade relations with the US and EU.

The main limitation of the Kaleckian approach is that it was conceived for a world in which industrial production was vertically integrated within national economies, except for imports of raw materials (which are easily accommodated in the model—see Taylor,

[20]Subject to the usual caveat that the increase in output outweighs the increase in productivity, if any.

1983). Today, production is vertically disintegrated within nations and characterized by "offshoring" of inputs or activities (e.g., assembly) to a host of trading partners. Production is organized into global value chains (GVCs), in which different stages of production are carried out in myriad different countries and intermediate goods are traded back-and-forth across national borders. This means that final demand in one country does not necessarily generate profits, jobs, or income solely within that country, and the degree to which any country is able to create value added depends on the position of its producers within GVCs (Durand and Milberg, 2020). New models are needed to incorporate the new character of global production into the analysis of how nations compete for opportunities for investment and employment, and to reflect how firms' profits depend on their positions in GVCs and their global operations, not merely on production in their home countries.[21]

3.2 The medium run: cumulative causation and uneven development in neo-Kaldorian models

The medium run is an analytical period in which several key variables that are taken as given in short-run models, especially nominal wages, labor productivity, and the RER, adjust endogenously over time. A good starting point for identifying the sources of international economic conflict in this time frame is the model of export-led cumulative causation (ELCC) inspired by Kaldor's famous "growth laws" (Dixon and Thirlwall, 1975; Thirlwall, 1983).[22] Kaldor (1966, 1970, 1971) identified exports of manufactures as the key driving force in the growth process in modern economies. He also postulated the existence of dynamic positive feedbacks from rapid (slow) growth of such exports to faster (slower) growth of output and productivity, which in turn improve (worsen) a country's cost competitiveness—and hence make its exports grow yet faster (even more slowly), thus fostering a virtuous (vicious) circle of robust (stagnant) overall growth. Borrowing a phrase from Myrdal (1957), Kaldor referred to such feedback loops as processes of

[21] Relevant contributions in this direction, using various mainstream and heterodox approaches, include Alviarez et al. (2025), Blecker (2012), Heintz and Milberg (2025), Schröder (2020), and Woodgate (2023).

[22] The following discussion draws heavily on Blecker (2025b). Portions are used with permission of Edward Elgar Publishing, Ltd.

"circular and cumulative causation."

Kaldor invoked three key theoretical elements in this effort to explain the causes of unequal growth rates among nations or regions. First, he emphasized increasing returns to scale, both static and dynamic, including induced technological innovation. He argued that increasing returns, broadly defined, were reflected in Verdoorn's law (sometimes later called the "Kaldor–Verdoorn law"), which was the empirical finding[23] that the growth rate of labor productivity is an increasing function of the growth rate of output in the manufacturing sector. This relationship implied that the relaxation (or tightening) of demand-side constraints on output growth would have positive feedback effects onto labor productivity growth, and hence onto cost competitiveness for domestic products in global markets.

Second, he focused on the role of structural change in the growth process, especially the transfer of labor out of agriculture and into (higher-productivity) manufacturing or, in a later stage, from manufacturing to services. In his era, services were generally seen as having low and stagnant productivity, but today so-called "modern services" like information technology (IT) also involve high and rising productivity. Third, he adopted the idea of a "supermultiplier" (Hicks, 1950), in which the growth of output is driven by the growth of an autonomous source of demand, to justify his focus on exports as the leading causal factor in the growth process. The supermultiplier concept incorporates a strong accelerator mechanism,[24] which implies that investment spending and capital stocks do not constitute independent constraints on output growth that could impede virtuous circles.

Putting all these elements together, countries or regions experiencing rapid growth of output would be expected to have high rates of investment and booming manufacturing sectors, while countries suffering from stagnant growth would have depressed rates

[23]Verdoorn (1949) and Kaldor (1966) originally estimated this relationship using international cross-sectional data for aggregate manufacturing sectors. More recently, it is usually estimated using international and/or industry panel data (e.g., León-Ledesma, 2002; Romero and McCombie, 2016; Romero and Britto, 2017; Magacho and McCombie, 2018). Typical estimates of the Verdoorn coefficient ρ are on the order of about 0.5, but vary widely by country and industrial sector.

[24]Serrano (1995) and Serrano and Freitas (2017) formalize this mechanism by assuming that firms adjust their investment to achieve a "normal" rate of capacity utilization in a "long-period" equilibrium.

of investment and declining manufacturing industries. Hence, "uneven development" between regions or countries would become "self-reinforcing," as the faster-growing areas would "acquire a cumulative competitive advantage" in industrial development over the slower-growing ones (Kaldor, 1970, p. 343).

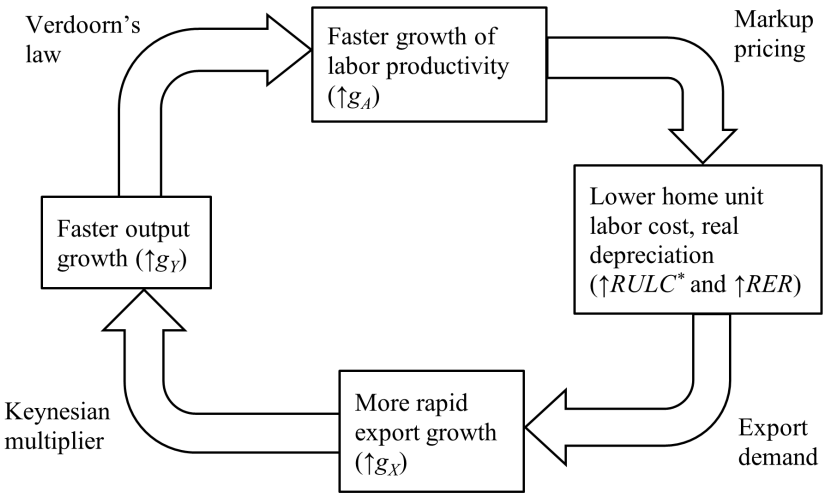

Figure 3: Kaldorian cumulative causation: schematic view. See text for variable definitions. The up arrows depict a virtuous circle; a vicious circle would be represented by down arrows.

This vision of self-reinforcing cumulative causation is depicted schematically in Figure 3, where the growth rate of any variable Z is represented by g_Z ($Z = A, X, Y$) and $RULC^*$ and RER are defined as before. Since the causation is circular, we can start at any point, say with an increase in export growth (perhaps obtained through the opening of a foreign market). Through Keynesian multiplier effects, faster export growth leads to faster growth of output, which in turn boosts labor productivity growth through Verdoorn's law. Assuming that nominal wages are rigid, domestic unit labor costs fall, thereby increasing $RULC^*$ and also (assuming no offsetting rise in markups) RER. This implies a real depreciation of the country's currency, or improved external competitiveness. As a result, export growth accelerates yet faster and the country enjoys a virtuous circle of ever-increasing growth of exports, output, productivity and cost competitiveness. Capital accumulation is not explicitly shown, because the supermultiplier concept allowed Kaldor to assume that investment in industrial capacity would adjust endogenously and

automatically to the growth of output via a strong accelerator effect.

Although structural change is not shown explicitly in Figure 3, the cumulative causation depicted there assumes that exports consist mostly of manufactures and that output growth is strongly reflected in manufacturing activity, since the Verdoorn relationship (the arrow going from g_Y to g_A) is supposed to apply only (or mainly) in that sector. As Kaldor stated,

> ... owing to the existence of increasing returns to scale *in manufacturing industries*, any initial advantage in terms of export competitiveness tends to have a cumulative effect, since the country which is able to increase its *manufactured* exports faster than the others also tends to have a faster rate of growth of productivity in its export industries, which enhances its competitive advantage still further. (Kaldor, 1971, p. 8, emphasis added)

With this qualification, Figure 3 can be used to show how international trade relations can be conflictive instead of cooperative. For example, if there is a real appreciation (RER falls instead of rising), say as a result of faster foreign productivity growth, this would cause export growth in the home country to slow down, thereby unleashing a vicious circle in which g_X, g_Y, and g_A would all cumulatively decline—all the vertical arrows in the boxes in the diagram would point downward, signifying a vicious circle. At the same time, those variables would all be increasing in the foreign country, which would would be experiencing a virtuous circle of the type shown in the figure. Thus, "trade may injure one region to the greater benefit of the other" (Kaldor, 1970, p. 341).

The conflictive nature of trade relations under the ELCC model can be further analyzed using the graph in Figure 4 (based on Setterfield and Cornwall, 2002).[25] The PR line represents what Setterfield and Cornwall (2002) call the "productivity regime," which

[25] A nontrivial difference between the schematic presentation in Figure 3 and the model represented in Figure 4 is that the latter specifies the RER in rate-of-change form, that is, $g_{RER} = g_E + g_{P^*} - g_P$. This is how RER is expressed in the models of Dixon and Thirlwall (1975) and Setterfield and Cornwall (2002), but originally Kaldor (1971, p. 7) had referred to "the *level* of [a country's] industrial costs relatively to other industrial exporters" (cited in Boggio and Barbieri, 2017, p. 26, emphasis added). This distinction plays an important role in empirical studies of RER effects on exports (see Boggio and Barbieri, 2017; Blecker, 2023, 2025b), but is not essential for present purposes.

is Verdoorn's law expressed in linear form as[26]

$$g_A = \gamma + \rho g_Y \tag{15}$$

where $\gamma > 0$ represents the autonomous part of productivity growth and ρ (usually assumed to satisfy $0 < \rho < 1$) measures the strength of the positive feedbacks (scale economies and induced innovation). The DR (for "demand regime") line combines the other three causal arrows in Figure 3, that is, the links going from growth of labor productivity g_A to growth of output g_Y, into one linear equation. Thus, the PR and DR lines together express the two directions of causality between the growth rates of output and productivity in the ELCC framework. It must be assumed that PR is steeper than DR for equilibrium (g_A, g_Y) to be positive and stable,[27] which essentially requires that there is *not too much* cumulative causation (the positive feedbacks are not too strong). Empirical estimates (e.g., León-Ledesma, 2002) suggest that the condition for PR to be steeper is easily satisfied.

Now, suppose that the foreign country's productivity regime is characterized by a Verdoorn's law equation with different parameters:

$$g_A^* = \gamma^* + \rho^* g_Y^* \tag{16}$$

Furthermore, suppose that the foreign country raises its productivity growth, for example, through the use of industrial and innovation policies, which increase its Verdoorn intercept γ^*. For the home country, this causes the DR line to shift downward to DR$'$, in which case the equilibrium growth rates fall to (g_A', g_Y') as shown in Figure 4. In a similar diagram for foreign (not shown), the PR* line would shift to the right, thereby raising equilibrium

[26] As in the original ELCC model of Dixon and Thirlwall (1975), this specification elides the distinction between manufacturing and other sectors and portrays the Verdoorn relationship as pertaining to the aggregate economy, thus ignoring Kaldor's emphasis on structural change.

[27] Setterfield (2002) argues for a shift in focus from the equilibrium growth path to the "traverse" of the economy toward that equilibrium trajectory, and also postulates that the process of growth during such a transition is likely to engender path-dependent changes in the underlying parameters that endogenously shift the equilibrium before it is ever reached. We will focus here on the model's equilibrium to facilitate our policy analysis, but it should be kept in mind that policy changes would be likely to induce a gradual movement toward the new equilibrium and could induce unpredictable, path-dependent changes to the system's equilibrium and dynamics of adjustment.

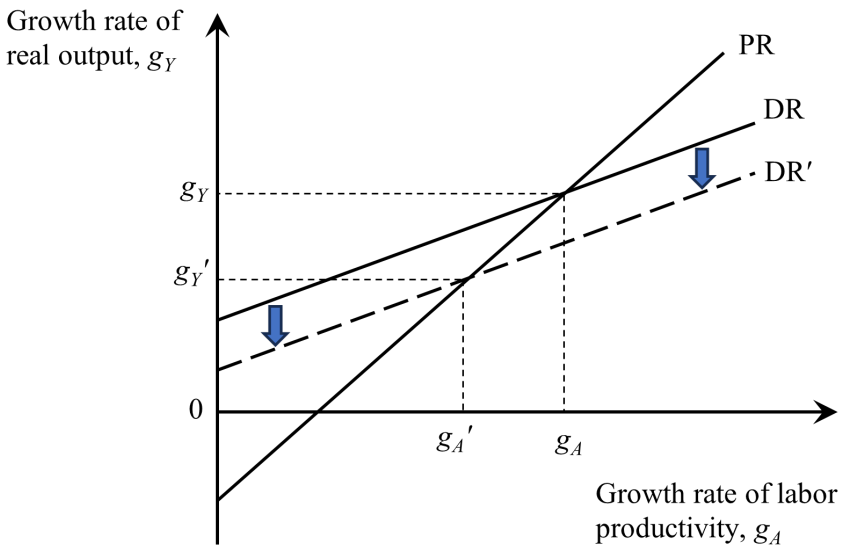

Figure 4: The export-led growth model with cumulative causation: demand regime (DR) and productivity regime (PR) in the home country and effects of an exogenous increase in foreign productivity growth (shift to DR′).

(g_A^*, g_Y^*). Thus, the cumulative growth mechanism would lead the home country to grow more slowly while the foreign country's growth speeds up, indicating a form of uneven development that exacerbates international conflict as the foreign country increases its global market share at the expense of the home country.

Like the neo-Kaleckian models covered earlier, the Kaldorian ELCC model assumes a world of vertically integrated industrial structures within national economies, and requires rethinking for a world characterized by offshoring and GVCs. The prevalence of GVC-oriented production makes it imperative to distinguish the value added in exports from the gross value of exports, as only the former boosts domestic income while a significant part of the latter consists of imported intermediate goods, the production of which creates income and employment in other nations. In addition, the ELCC paradigm needs to be reconceptualized for a world in which IT and other knowledge-intensive activities play a more important role relative to the manufacture or assembly of physical goods.

On the one hand, these transformations in global production imply new channels for the self-reinforcing mechanisms contemplated in the model to spill over from one country to another, instead of being contained within a single country. For example, faster growth

of output in a particular sector in a given country could enhance economies of scale for upstream suppliers located in other countries, or induce technological innovation in foreign downstream customers. On the other hand, those transformations also foster new means of concentrating the gains from global trade in particular segments of GVCs located in certain countries. For example, the monopolization of intellectual property and other intangible assets by the large IT platforms and other large firms (Microsoft, Apple, Google, Big Pharma, etc.) skews the capture of value added in GVCs to the owners of those firms located mainly in the US and other advanced economies, while the benefits of specializing in manufacturing production for emerging economies seeking to escape the middle-income trap have diminished (Durand and Milberg, 2020; Szirmai and Verspagen, 2015).

To the best of this author's knowledge, none of the theoretical ELCC models developed to date have addressed these profound transformations. Nevertheless, recent econometric studies have found relevant empirical evidence, especially in regard to the significance of relative cost competitiveness—a key driver of Kaldorian cumulative causation—for different types of products or stages in GVCs. Several studies have found that relative cost or RER effects on exports are weaker for high-technology (or high-skill) products, compared with medium- or low-technology (or medium- or low-skill) goods (e.g., Bottega and Romero, 2021; Caglayan and Demir, 2019), which would seem to indicate that Kaldorian positive feedbacks are stronger for the latter types of goods. However, by focusing on value added market shares rather than exports, Keil (2024, p. 204) finds that the coefficient on relative unit labor costs "is higher [in absolute value] for advanced export-oriented industries (-1.8) than for medium low-tech and low-tech domestic-oriented industries (-1.0)" using a vertically integrated measure of value added disaggregated by country-sector combinations, which implies the continued significance of relative cost competition for the location of advanced GVC segments.

A more common criticism of the ELCC approach has been that it overemphasizes positive feedbacks and ignores the potential for negative feedbacks or adjustment mechanisms (Blecker, 2013, 2025b). Kaldor (1970) assumed that nominal wages were sticky because of stable relative wage structures among industrial workers in a given country or region,

and the formalizations by Dixon and Thirlwall (1975) and Setterfield and Cornwall (2002) (among others) assume that the nominal wage (or its rate of change) remains rigid during a cumulative growth process. More realistically, one could assume that there is a long lag in wage increases, and the necessary condition for the positive feedbacks to operate in the medium run is that wages rise more slowly than productivity for a prolonged period of time (as in Ribeiro et al., 2017). But eventually, rapid growth strengthens the bargaining power of labor so that wages start to rise, or else rising export revenue can cause the nominal exchange rate to appreciate, leading to a real appreciation—as has occurred in countries like Japan and China.

Both the rise of GVC production and the likelihood of offsetting adjustment mechanisms can potentially ameliorate the international conflicts bred by the unequal growth that results from cumulative causation, as leader countries may slow down while others catch up.[28] But these phenomena, along with the emergence of new technological paradigms like the IT revolution, also create new sources of international tension. These adjustment processes and the realignments of global technological leadership do not make growth convergent and equal among nations, but rather spawn new and more complex forms of uneven development. Some countries may race ahead in technological innovation (US, China, Germany), while others gain advantages from their location in other parts of GVCs but may get locked in to specializations that limit their potential for future learning à la Pasinetti. For example, resource exporters may benefit from high commodity prices but become deindustrialized through "Dutch disease" (Bresser-Pereira et al., 2015), while exporters of labor-intensive manufactures focused on assembly of imported inputs may gain industrial jobs but fail to promote the development of innovative capacity or broad-based economic expansion (see Moreno-Brid et al., 2005; Blecker, 2016, on the Mexican case).

[28]Kaldor (1981, p. 597) eventually admitted that the polarizing tendencies he had analyzed previously could be "counteracted by the successful spread of industrialisation to other countries."

3.3 The long run: the composition of trade, the real exchange rate, and BOP-constrained growth

The long run is usually defined as a steady-state equilibrium growth path, along which certain key proportions (capital-labor ratio, capital-output ratio, utilization rate, and profit share) are constant. For present purposes, the most relevant framework is what has become the "workhorse" model of post-Keynesian open economy macroeconomics: the BOP-constrained growth model of Thirlwall (1979). In this model, the key condition for sustainability of long-run growth is the maintenance of BOP equilibrium, which is usually defined as either a balanced current account or a constant ratio of the current account balance to output (Moreno-Brid, 1998, 2003). Here, we limit ourselves to the basic version in which the current account must be balanced in the long run, which is equivalent to balanced trade in goods and services if interest payments and transfers are ignored.

Under standard assumptions,[29] the basic model yields the well-known solution for what Perraton (2003) called the "strong" version of Thirlwall's law:

$$g_Y^B = \left(\frac{\eta_X}{\eta_M}\right) g_{Y^*} \tag{17}$$

where g_Y^B is the BOP-constrained (or equilibrium) growth rate of output, η_X and η_M are the income elasticities of demand for exports and imports (respectively), and g_{Y^*} is the growth rate of foreign (or rest-of-world) income.

In this model, one evident conflict is that if a large foreign country refuses to adopt an expansionary fiscal policy, thereby depressing g_{Y^*}, this can restrain the BOP-constrained growth rate g_Y^B for the home country (see the two-country model in McCombie, 1993). However, other sources of international conflict can be seen more clearly if we consider that the aggregate income elasticities η_X and η_M are trade-weighted averages of the income elasticities for individual goods, as modeled explicitly in the "multi-sectoral Thirlwall's law" (MSTL) of Araujo and Lima (2007). Using the simplified version in Gouvêa and

[29] In particular, supplies of both exports and imports must be infinitely elastic (for a critical view, see Razmi, 2016). Relative prices do not matter, assuming that *either* the Marshall–Lerner condition does not hold ($|\varepsilon_x + \varepsilon_m| \approx 1$) *or* RER is constant in the long run ($g_{RER} = g_E + g_{P^*} - g_P \approx 0$).

Lima (2013), the MSTL solution is

$$g_Y^B = \left(\frac{\sum_{i=1}^{N} \alpha_i \eta_{X,i}}{\sum_{i=1}^{N} \beta_i \eta_{M,i}} \right) g_{Y^*} \tag{18}$$

where i indexes the good or industry, α_i and β_i are the shares of good i in total exports and imports (respectively),[30] $\eta_{X,i}$ and $\eta_{M,i}$ are the income elasticities of export and import demand for each good i, and there are N total industries or goods, with

$$\sum_{i=1}^{N} \alpha_i = 1 \quad \text{and} \quad \sum_{i=1}^{N} \beta_i = 1.$$

Conflict can arise if some countries aspire—as this model implies they should—to specialize in exports of goods that have high income elasticities $\eta_{X,i}$, so that the those goods would have relatively high export shares α_i, while importing mainly goods that have low income elasticities $\eta_{M,i}$ so that these goods would have relatively high import shares β_i. Countries that are successful in achieving this would have relatively high MSTL growth rates. However, their success would require some other nations to specialize in exporting mainly goods that have low income elasticities, and could block the development of domestic production of goods with high income elasticities in these other nations, thereby reducing their MSTL growth rates. This problem is mitigated to the extent that other countries can specialize in niche products, differentiated goods, or specific links in GVCs that also have high income elasticities, but *some* countries have to produce the low-income-elasticity goods and they would be the ones whose long-term BOP constraint would be tightened.[31]

The MSTL approach has become a vehicle for reintroducing *RER* effects into BOP-constrained growth models. *RER* effects are ruled out of the solution for Thirlwall's

[30] Gouvêa and Lima (2010, 2013) stress that the industry shares α_i and β_i, foreign growth rate g_{Y^*}, and home BP-equilibrium growth rate g_Y^B are all time-varying, and evolve over time as structural change alters the composition of a country's trade, but they assume that the income elasticities for individual goods remain constant. We omit time subscripts here to avoid notational clutter.

[31] The growth differentials between such countries can widen over time if Verdoorn effects are introduced into an MSTL framework, as in Araujo (2013). Araujo allows for the positive feedbacks in the ELCC model to operate at the industry level in the medium run, during which relative prices can change, and these changes influence the evolution of the weights on exported and imported goods.

law in equation (17) because the standard Thirlwall model only incorporates the RER in *growth rate* form, and "a *continuous* depreciation of the currency ... is implausible" in the long run (McCombie, 2011, p. 358, emphasis in original). Hence, it is typically assumed that $g_{RER} = g_E + g_{P^*} - g_P \approx 0$, in which case there are no RER effects on the growth of demand for exports or imports in the long run. However, Setterfield and Ozcelik (2018) and Cimoli et al. (2019) have constructed models in which an RER depreciation *in levels* causes the expansion of tradable goods industries with relatively high income elasticities, so that the shares of those goods in exports α_i increase, while their shares in imports β_i decrease because of induced import substitution, thereby raising the long-run MSTL growth rate.

The model of Cimoli et al. (2019) implies that RER depreciation for economies in the global South can help them to converge with the more advanced economies in the North, by raising the weighted-average income elasticity of demand for Southern exports and lowering the corresponding elasticity for Southern imports. However, by the same logic, it must be the case that the weighted-average income elasticities would shift in the opposite directions for the North, since Northern exports are Southern imports and vice-versa. Hence, if there is a real depreciation of Southern currencies relative to Northern ones, the convergence would take place by tightening the BOP constraint on growth in the North as well as by relaxing that constraint for the South. Of course, this would simply be the reverse of the uneven development that benefited the global North at the expense of the South in the past.

In addition, an RER depreciation can encourage greater investment in export-oriented and import-substituting industries because it increases the profitability of tradable goods production, as found in empirical studies by Ibarra and Ros (2019) and Palazzo (2024), among others.[32] This is especially true when exported goods are invoiced in a foreign currency (usually the US dollar), in which case a real depreciation lowers the costs of labor and other nontradable, domestic inputs relative to the price of output. The standard

[32]In a related vein, Levy-Yeyati et al. (2013) find that monetary policies that depreciate the exchange rate affect growth mainly through effects on investment and saving, which they attribute to the impact on profitability, rather than through a trade channel.

Thirlwall model ignores this possibility by assuming that exports are priced in domestic currency and that export supplies are infinitely elastic, but in the real world exports are often priced in a dominant currency (Gopinath et al., 2020; Amiti et al., 2022) and export supplies can be constrained by available capital stocks and industrial capacity (Razmi, 2016). Once again, what matters is the RER level, not its rate of change, so that the long-run implausibility argument of McCombie (2011) does not apply. Since one country's RER depreciation is another's appreciation, the potential for conflict is unavoidable if some countries are able to pursue competitive devaluations that attract large amounts of foreign investment at the expense of others, and the conflict is compounded if capital is "footloose" and countries are wide open to international capital flows.

Like the other models, the BOP-constrained growth framework needs updating for a global economy characterized by offshoring and GVCs. One effort in this direction, using an expanded MSTL approach, is Trigg (2020), but much more work is needed.

4 COOPERATIVE SOLUTIONS AND POLICY RECOMMENDATIONS

Recognizing that international trade relations contain inherent conflicts of interest, from both macroeconomic and industrial points of view, does not imply that nations are doomed to adopt aggressive nationalistic policies or fight endless trade wars. It also does not imply that protectionist policies are generally desirable. The gains from trade in traditional models of comparative advantage and newer models of differentiated goods are real, and can be worth obtaining as long as the criteria set out by Pasinetti (maintaining full employment and taking full advantage of technological learning) are satisfied, and if realizing those gains does not interfere with developmental objectives or impose too many negative externalities and adjustment costs. But beyond that, post-Keynesian theory suggests several specific options for international cooperation, which have the potential to make all (or most) countries better off while averting the damaging effects of beggar-thy-neighbor protectionism.

One important avenue for international cooperation is the adoption of coordinated fiscal expansions. In the short-run, two-country neo-Kaleckian model from subsection 3.1, simultaneous fiscal expansions in home and foreign would increase profits, output, and employment in both countries. If the expansionary policies were carefully calibrated, they could also be used to achieve or maintain balanced trade, or a reasonable target for sustainable current account imbalances.[33] A single country is often reticent to use a fiscal expansion for fear of increasing its trade deficit, and therefore can be tempted to use a competitive devaluation instead. But if it were assured that the foreign country would also adopt a fiscal expansion at the same time, the first country might be willing to forego the competitive devaluation and rely on a fiscal stimulus instead. This would be a win-win alternative to the potential use of a beggar-thy-neighbor devaluation.[34]

The ELCC model points out other opportunities for cooperative global expansion. If one country adopts an industrial or technology policy that boosts the autonomous part of productivity growth, the intercept γ in the Verdoorn equation (15) would rise and the PR line would shift up (in a graph similar to Figure 4), thereby increasing the growth rates of output and productivity at home. However, if the country (or a group of countries pursuing similar policies) is large enough to have an impact on its trading partners, these gains would come at the expense of reducing the growth rates of output and productivity abroad. In an analogous graph for the foreign country, the DR^* line would shift down, thereby lowering g_Y^* and g_A^*. In this respect, industrial policy in a large country can be a beggar-thy-neighbor policy, even though it does not impose comparative static losses from trade per se (and could raise consumer welfare in the foreign country by cheapening home exports). But rather than try to counter this with tariffs or other trade barriers, a superior option for the foreign country is to adopt its own industrial and technology policies, thereby raising γ^*, shifting PR^* up, and enabling faster growth of productivity and output in both countries.

[33] In some cases, starting from a large trade imbalance, it might be necessary for the deficit country to adopt a fiscal contraction while the surplus country adopts a stimulus. The more the latter occurs, the smaller is the needed fiscal adjustment in the deficit country.

[34] A similar point can be demonstrated with regard to long-run growth rates of national income in the two-country version of the Thirlwall model of BOP-constrained growth (see McCombie, 1993; Blecker and Setterfield, 2019, pp. 452–456).

An important caveat is that the countries need to find complementary industrial niches, distinctive types of differentiated products, or different segments of GVCs to target with their industrial policies.[35] What will not work is when all countries attempt to promote the same sectors (like steel) at the same time, which only results in excess global capacity, incentives to dump exports, and likely protectionist responses in the importing nations. But the key point is that industrial policy is only beggar-thy-neighbor if the neighbor ties its hands by insisting on laissez-faire, "free market" policies, which fail to promote its own export industries. A case in point might be the displacement of Mexican exports in the US market by Chinese exports in the early 2000s (Gallagher et al., 2008), which resulted from the combination of strong industrial policies in China and the abandonment of industrial policy by Mexico (under US pressure, as a condition for Brady Plan debt relief and the formation of NAFTA), along with much lower wages in China, an overvalued peso, and an undervalued yuan at the time.

Post-Keynesian and closely related views on exchange rate policy vary widely, and only a brief discussion can be offered here. Modern monetary theory (MMT) supports flexible (nominal) exchange rates, which it views as necessary for governments to have "sovereignty" over their monetary and fiscal policies (Wray, 2024). MMT supporters would not make the exchange rate a target of monetary policy, which they believe should work in tandem with (or fully accommodate) fiscal policy to target full employment. In contrast, Davidson (1992) supported a system of managed exchange rates (fixed but adjustable, as under Bretton Woods) along with an updated version of Keynes' "bancor" proposal. Davidson's version would create a new international reserve asset to replace the US dollar and other national currencies in central bank portfolios, while requiring surplus countries to spend their surpluses on imports or foreign investments or else to be penalized by losses of reserves. He argued that this mechanism would eliminate the

[35] While industrial policies do need to target specific sectors or types of products for purposes of export promotion, they also need to ensure that technical progress and productivity growth are spread relatively evenly throughout the economy, including in domestically oriented industries. Otherwise, if productivity growth is too concentrated in specialized export activities, the Pasinetti (1981) model (discussed earlier) warns that they will experience declining terms of trade that will transfer some of the productivity gains abroad. This admittedly requires a delicate balancing act by policy makers, but the productivity gains from export promotion will at least partially leak abroad if this problem is not addressed—as the findings of Ruiz Nápoles and Castañeda León (2025) suggest occurred in the case of Mexico's trade with the US.

incentives for surplus countries to hoard reserves, and thereby eliminate the contractionary bias inherent in the asymmetrical adjustments of surplus and deficit countries to trade imbalances, discussed earlier.

Proponents of the original formulation of Thirlwall's law assert that exchange rates and relative prices are ineffectual for balancing trade and irrelevant to long-run equilibrium growth (McCombie and Thirlwall, 1994). This view was supported by Kaldor (1978) toward the end of his life, when he recanted his earlier advocacy of the ELCC approach. But as noted earlier, RER effects (in levels rather than rates of change) can be incorporated into BOP-constrained growth models through various channels. Furthermore, the recent empirical evidence surveyed in Blecker (2023) does not support the Thirlwall–McCombie view of RER irrelevance. Quite the contrary, a vast literature has found significant and robust RER effects on both export and growth performance, subject to some qualifications in regard to levels of economic development, types of export products, and control variables included.

In contrast, the new developmentalists (Bresser-Pereira et al., 2015) emphasize the importance of maintaining a competitive real exchange rate, which they call the "industrial equilibrium exchange rate," and especially of avoiding overvaluation to prevent premature deindustrialization. They do not support undervaluing a currency below its industrial equilibrium level. Their opposition to an undervaluation strategy is supported by the finding in the empirical literature that the effects of RER depreciation are nonlinear or asymmetrical: they are stronger and more significant for currencies that start out overvalued than ones that start out closer to an equilibrium level.

From the viewpoint of national economic policy, the new developmentalist approach of targeting a competitive but not undervalued real exchange rate seems like the best option. Although this approach is not a panacea for promoting development, avoiding overvaluation does seem to be a necessary condition for robust growth (Blecker, 2023; Demir and Razmi, 2022). And while it would not eliminate all trade imbalances, it should suffice to keep them within reasonable bounds in terms of financial sustainability, and would have the added benefit of avoiding both premature deindustrialization caused by overvalua-

tion on the one hand and beggar-thy-neighbor effects provoked by undervaluation on the other. Ideally, a new global system of managed exchange rates could further prevent exchange rate fluctuations from becoming a source of international instability and friction, but Davidson's revival of a Keynes-like proposal from the 1940s is unlikely to work in the 21st century. Unless there is a massive return to capital controls, a new global monetary system would have to be designed for a world awash in liberalized financial flows. It would also require a higher level of cooperation of the major players (US, EU, China, India, and so on) than seems realistic in the foreseeable future. How such a system could be constructed in a way that would lessen conflicts in international trade is an important subject for discussion, but would be beyond the scope of this paper.

5 CONCLUSIONS

The revival of economic nationalism after several decades in which trade liberalization policies predominated may have come as a surprise to most neoclassical trade economists, but it should not have surprised those who have studied post-Keynesian models for open economies. Nor, in fairness, should it have surprised any economists who have researched the distributional impact of trade (e.g., Rodrik, 2021), the potential benefits of industrial policies (e.g., Juhász et al., 2024), dynamic gains from real depreciations (e.g., Korinek and Servén, 2016), or uneven development between the North and South (e.g., Hoyos, 2025). The rise of self-defeating "populist" responses like Brexit and, even worse, Trump's tariffs and "dealmaking" should, nonetheless, give a wake-up call for the urgent need to find alternative policy solutions that can maintain a generally open international trading system while allowing countries to pursue progressive goals in regard to full employment, distributional equity, and ecological sustainability.

Following Robinson (1947), most post-Keynesians do not generally support "beggar-my-neighbour" policies like high tariffs or currency undervaluation (although they could possibly support strong retaliation against Trump's tariffs). However, post-Keynesians and other dissenting economists do accept the "infant industry" rationale for strategically promoting nascent sectors that have strong growth (and export) potential. As noted

earlier, the industrial policies required for this purpose could possibly include selective, carefully targeted trade restrictions. For the most part, however, these policies would involve other sorts of measures including: tax incentives or other subsidies for private investment; public investment in infrastructure, education, and training; the cultivation of innovative capacity; and initiatives for regional development. Trade restrictions, if used at all, are only likely to succeed in the presence of these other supports. Also, successful trade policies for industrial development may involve selective *lowering* of tariffs for imported raw materials or intermediate goods, rather than raising tariffs for final outputs (Lane, 2025).

More broadly, any realistic design of trade and industrial policies for the 21st century must take the contemporary realities of offshoring and GVCs into account, as it is impossible to turn back the clock to an earlier era of nationally insulated industries (and it would be prohibitively costly to try to do so). Such policy design requires understanding the potential for conflict as well as cooperation in international trade relations, and cannot be based solely on orthodox models that only allow for the latter. The fact that too many economists and policy makers have ignored the potential for international trade to be conflictive, as well as the distributional impact of trade and the potential benefits of industrial policies, has only encouraged the more dysfunctional and dangerous forms of economic nationalism to emerge and thrive.

References

Alviarez, V. I., M. Fioretti, K. Kikkawa, and M. Morlacco (2025). Two-sided market power in firm-to-firm trade. Working Paper 31253, National Bureau of Economic Research. May 2023, revised July 2025.

Amiti, M., O. Itskhoki, and J. Konings (2022). Dominant currencies: how firms choose currency invoicing and why it matters. *Quarterly Journal of Economics 137*(3), 1435–1493.

Araujo, R. A. (2013). Cumulative causation in a structural economic dynamic approach to economic growth and uneven development. *Structural Change and Economic Dynamics 24*, 130–140.

Araujo, R. A. and G. T. Lima (2007). A structural economic dynamics approach to balance-of-payments-constrained growth. *Cambridge Journal of Economics 31*(5), 755–774.

Autor, D., D. Dorn, and G. Hanson (2016). The China shock: learning from labor-market adjustment to large changes in trade. *Annual Review of Economics 8*, 205–240.

Autor, D., D. Dorn, G. Hanson, and K. Majlesi (2020). Importing political polarization? the electoral consequences of rising trade exposure. *American Economic Review 110*(10), 3139–3183.

Baldwin, R. (2025). *The Great Trade Hack: How Trump's Trade War Fails and the World Moves on*. Paris and London: Centre for Economic Policy Research, CEPR Press.

Bhagwati, J. N., A. Panagariya, and T. N. Srinivasan (1998). *Lectures on International Trade* (2nd ed.). Cambridge, MA: MIT Press.

Blecker, R. A. (1989). International competition, income distribution and economic growth. *Cambridge Journal of Economics 13*(3), 395–412.

Blecker, R. A. (1999). Kaleckian macro models for open economies. In J. Deprez and J. T. Harvey (Eds.), *Foundations of International Economics: Post Keynesian Perspectives*, pp. 116–149. London and New York: Routledge.

Blecker, R. A. (2012). Stolper–Samuelson revisited: trade and distribution with oligopolistic profits. *Metroeconomica 63*(3), 569–598.

Blecker, R. A. (2013). Long-run growth in open economies: export-led cumulative causation or a balance-of-payments constraint? In G. C. Harcourt and P. Kriesler (Eds.), *The Oxford Handbook of Post-Keynesian Economics, vol. I, Theory and Origins*, pp. 390–414. Oxford, UK: Oxford University Press.

Blecker, R. A. (2016). Integration, productivity, and inclusion in Mexico: a macro perspective. In A. Foxley and B. Stallings (Eds.), *Innovation and Inclusion in Latin America: Strategies to Avoid the Middle Income Trap*. New York: Palgrave Macmillan.

Blecker, R. A. (2022). New advances and controversies in the framework of balance-of-payments-constrained growth. *Journal of Economic Surveys 36*(2), 429–467.

Blecker, R. A. (2023). How important is the real exchange rate for exports and growth? *European Journal of Economics and Economic Policies: Intervention 20*(2), 250–265.

Blecker, R. A. (2025a). The balance of payments and exchange rates: why are they important? In H. Bougrine, L.-P. Rochon, and M. Seccareccia (Eds.), *Intermediate Macroeconomics: Theory, Policy and Competing Perspectives*, pp. 175–198. Cheltenham, UK: Edward Elgar Publishing Ltd.

Blecker, R. A. (2025b). Kaldorian growth theory. In M. Setterfield (Ed.), *Handbook of Alternative Theories of Economic Growth* (2nd ed.). Cheltenham, UK: Edward Elgar Publishing Ltd., forthcoming.

Blecker, R. A., M. Cauvel, and Y. K. Kim (2022). Systems estimation of a structural model of distribution and demand in the US economy. *Cambridge Journal of Economics 46*(2), 391–420.

Blecker, R. A. and M. Setterfield (2019). *Heterodox Macroeconomics: Models of Demand, Distribution and Growth*. Cheltenham, UK: Edward Elgar.

Boggio, L. and L. Barbieri (2017). International competitiveness in post-Keynesian growth theory: controversies and empirical evidence. *Cambridge Journal of Economics 41*(1), 25–47.

Bottega, A. and J. P. Romero (2021). Innovation, export performance and trade elasticities across different sectors. *Structural Change and Economic Dynamics 58*, 174–184.

Bresser-Pereira, L. C., J. L. Oreiro, and N. Marconi (2015). *Developmental Macroeconomics: New Developmentalism as a Growth Strategy*. London and New York: Routledge.

Caglayan, M. and F. Demir (2019). Exchange rate movements, export sophistication and direction of trade: the development channel and North-South trade flows. *Cambridge Journal of Economics 43*(6), 1623–1652.

Chirinko, R. S., S. M. Fazzari, and A. P. Meyer (1999). How responsive is business capital formation to its user cost? an exploration with micro data. *Journal of Public Economics 74*(1), 53–80.

Chirinko, R. S., S. M. Fazzari, and A. P. Meyer (2011). A new approach to estimating production function parameters: the elusive capital–labor substitution elasticity. *Journal of Business and Economic Statistics 29*(4), 587–594.

Choi, J., I. Kuziemko, E. Washington, and G. Wright (2024). Local economic and political effects of trade deals: evidence from NAFTA. *American Economic Review 114*(6), 1540–1575.

Cimoli, M., J. B. Pereima, and G. Porcile (2019). A technology gap interpretation of growth paths in Asia and Latin America. *Research Policy 48*(1), 125–136.

Clausing, K. A. and M. E. Lovely (2024). Why Trump's tariff proposals would harm working Americans. Technical report, Peterson Institute for International Economics.

Davidson, P. (1992). Reforming the world's money. *Journal of Post Keynesian Economics 15*(2), 153–179.

de Bolle, M., J. Cohen-Setton, and M. Sarsenbayev (2025). *The New Economic Nationalism*. Washington, DC: Peterson Institute for International Economics.

De Loecker, J. and F. Warzynski (2012). Markups and firm-level export status. *American Economic Review 102*(6), 2437–2471.

Demir, F. and A. Razmi (2022). The real exchange rate and development: theory, evidence, issues and challenges. *Journal of Economic Surveys 36*(2), 386–428.

Dixon, R. and A. Thirlwall (1975). A model of regional growth-rate differences on Kaldorian lines. *Oxford Economic Papers 27*(2), 201–14.

Durand, C. and W. Milberg (2020). Intellectual monopoly in global value chains. *Review of International Political Economy 27*(2), 404–429.

Egger, H. and U. Kreickemeier (2012). Fairness, trade, and inequality. *Journal of International Economics 86*(2), 184–196.

Feenstra, R. C. (2016). *Advanced International Trade: Theory and Extensions* (2nd ed.). Princeton: Princeton University Press.

Gallagher, K. P., J. C. Moreno-Brid, and R. Porzecanski (2008). The dynamism of Mexican exports: lost in (Chinese) translation? *World Development 36*(8), 1365–1380.

Gopinath, G., E. Boz, C. Casas, F. J. Díez, P.-O. Gourinchas, and M. Plagborg-Møller (2020). Dominant currency paradigm. *American Economic Review 110*(3), 677–719.

Gouvêa, R. R. and G. T. Lima (2010). Structural change, balance-of-payments constraint, and economic growth: evidence from the multisectoral Thirlwall's law. *Journal of Post Keynesian Economics 33*(1), 169–204.

Gouvêa, R. R. and G. T. Lima (2013). Balance-of-payments-constrained growth in a multisectoral framework: a panel data investigation. *Journal of Economic Studies 40*(2), 240–54.

Hakobyan, S. and J. McLaren (2016). Looking for local labor market effects of NAFTA. *Review of Economics and Statistics 98*(4), 728–741.

Harrigan, J. and A. Reshef (2015). Skill-biased heterogeneous firms, trade liberalization and the skill premium. *Canadian Journal of Economics 48*(3), 1024–1066.

Heintz, J. and W. Milberg (2025). Investing in power: unequal exchange in global value chains. Working paper, University of Massachusetts, Amherst, and The New School for Social Research. August.

Hicks, J. R. (1950). *A Contribution to the Theory of the Trade Cycle*. Oxford, UK: Clarendon Press.

Hitchens, A. (2025). Donald Trump's tariff dealmaker-in-chief: how Howard Lutnick, the Secretary of Commerce, plans to transform government into a money-making enterprise. *The New Yorker*. July 21, https://www.newyorker.com/magazine/2025/07/28/donald-trumps-tariff-dealmaker-in-chief.

Hoyos, M. (2025). North–South trade as a source of uneven development: a critical literature review on the role of absorptive capacity. *Journal of Industry, Competition and Trade 25*(1), 1–21.

Hume, D. (1752). *Political Discourses*. Edinburgh, UK: R. Fleming.

Ibarra, C. A. and J. Ros (2019). Profitability and capital accumulation in Mexico: a first look at tradables and non-tradables based on KLEMS. *International Review of Applied Economics 33*(3), 426–452.

Juhász, R., N. J. Lane, and D. Rodrik (2024). The new economics of industrial policy. *Annual Review of Economics 16*, 213–242.

Juhász, R., N. J. Lane, E. Oehlsen, and V. C. Perez (2025). Measuring industrial policy: a text-based approach. Working Paper 33895, National Bureau of Economic Research.

Kaldor, N. (1966). *Causes of the Slow Rate of Economic Growth in the United Kingdom*. Cambridge, UK: Cambridge University Press.

Kaldor, N. (1970). The case for regional policies. *Scottish Journal of Political Economy 17*(3), 337–348.

Kaldor, N. (1971). Conflicts in national economic objectives. *Economic Journal 81*(321), 1–16.

Kaldor, N. (1978). The effect of devaluations on trade in manufactures. In *Further Essays on Applied Economics*, pp. 99–118. London, UK: Duckworth.

Kaldor, N. (1981). The role of increasing returns, technical progress and cumulative causation in the theory of international trade and economic growth. *Économie appliquée 34*(4), 593–617.

Kalecki, M. (1942). A theory of profits. *Economic Journal 52*(206/207), 258–267.

Kalecki, M. (1968). *Theory of Economic Dynamics: An Essay on Cyclical and Long-Run Changes in Capitalist Economy*. New York: Monthly Review Press.

Keil, S. (2024). Competing for manufacturing value added: How strong is competitive cost pressure on sectoral level? *Structural Change and Economic Dynamics 69*, 197–212.

Keynes, J. M. (1936). *The General Theory of Employment, Interest and Money*. London: Macmillan.

Keynes, J. M. (1980). Post-war currency policy. In D. Moggridge (Ed.), *The Collected Writings of John Maynard Keynes, Vol. 25: Activities 1940–1944, Shaping the Post-War World: The Clearing Union*, pp. 21–33. London: Macmillan. (Original memorandum of September 8, 1941).

Korinek, A. and L. Servén (2016). Undervaluation through foreign reserve accumulation: static losses, dynamic gains. *Journal of International Money and Finance 64*, 104–136.

Krugman, P. R. (1979). Increasing returns, monopolistic competition, and international trade. *Journal of International Economics 9*(4), 469–479.

Lane, N. (2025). Manufacturing revolutions: industrial policy and industrialization in South Korea. *Quarterly Journal of Economics 140*(3), 1683–1741.

Lavoie, M. (2022). *Post-Keynesian Economics: New Foundations* (2nd ed.). Cheltenham, UK: Edward Elgar.

León-Ledesma, M. A. (2002). Accumulation, innovation and catching-up: an extended cumulative growth model. *Cambridge Journal of Economics 26*(2), 201–216.

Lerner, A. P. (1936). The symmetry between import and export taxes. *Economica N.S. 3*(11), 306–313.

Levy-Yeyati, E., F. Sturzenegger, and P. A. Gluzmann (2013). Fear of appreciation. *Journal of Development Economics 101*, 233–247.

Magacho, G. R. and J. S. L. McCombie (2018). A sectoral explanation of per capita income convergence and divergence: estimating Verdoorn's law for countries at different stages of development. *Cambridge Journal of Economics 42*(4), 917–934.

Marglin, S. A. and A. Bhaduri (1990). Profit squeeze and Keynesian theory. In S. A. Marglin and J. B. Schor (Eds.), *The Golden Age of Capitalism: Reinterpreting the Postwar Experience*, pp. 153–186. Oxford: Oxford University Press.

McCombie, J. S. L. (1993). Economic growth, trade interlinkages, and the balance of payments constraint. *Journal of Post Keynesian Economics 15*(4), 471–505.

McCombie, J. S. L. (2011). Criticisms and defences of the balance-of-payments constrained growth model: some old, some new. *PSL Quarterly Review 64*(259), 353–392.

McCombie, J. S. L. and A. P. Thirlwall (1994). *Economic Growth and the Balance-of-Payments Constraint*. London and New York: St. Martin's Press.

Melitz, M. J. (2003). The impact of trade on intra-industry reallocations and aggregate industry productivity. *Econometrica 71*(6), 1695–1725.

Minsky, H. P. (1986). *Stabilizing an Unstable Economy*. New Haven: Yale University Press.

Moreno-Brid, J. C. (1998). On capital flows and the balance-of-payments-constrained growth model. *Journal of Post Keynesian Economics 21*(2), 283–298.

Moreno-Brid, J. C. (2003). Capital flows, interest payments and the balance-of-payments constrained growth model: a theoretical and empirical analysis. *Metroeconomica 54*(2–3), 346–365.

Moreno-Brid, J. C., J. Santamaría, and J. C. Rivas Valdivia (2005). Industrialization and economic growth in Mexico after NAFTA: the road travelled. *Development and Change 36*(6), 1095–1119.

Mott, T. and E. Slattery (1994a). The influence of changes in income distribution on aggregate demand in a Kaleckian model: stagnation vs. exhilaration reconsidered. In P. Davidson and J. Kregel (Eds.), *Employment, Growth, and Finance*, pp. 69–82. Aldershot, UK: Edward Elgar Publishing.

Mott, T. and E. Slattery (1994b). Tax incidence and macroeconomic effects in a kaleckian model when profits finance affects investment and prices may respond to taxes. *Journal of Post Keynesian Economics 16*(3), 391–409.

Myrdal, G. (1957). *Economic Theory and Underdeveloped Regions*. London, UK: Duckworth.

Onaran, Ö. and G. Galanis (2012). Is aggregate demand wage-led or profit-led? national and global effects. Technical report, International Labour Office, Geneva.

Palazzo, G. (2024). Real exchange rate and export surge episodes: what sectors take advantage of the real exchange rate stimulus? *Structural Change and Economic Dynamics 68*, 446–467.

Pariboni, R. and W. Paternesi Meloni (2025). What lies behind export-led growth? An inquiry into the role of price and non-price competitiveness. *Review of Keynesian Economics 13*(3), 377–403.

Pasinetti, L. L. (1981). *Structural Change and Economic Growth: A Theoretical Essay on the Dynamics of the Wealth of Nations*. Cambridge, UK: Cambridge University Press.

Pasinetti, L. L. (1993). *Structural Economic Dynamics: A Theory of the Economic Consequences of Human Learning*. Cambridge, UK: Cambridge University Press.

Perraton, J. (2003). Balance of payments constrained growth and developing countries: an examination of Thirlwall's hypothesis. *International Review of Applied Economics 17*(1), 1–22.

Razmi, A. (2016). Correctly analysing the balance-of-payments constraint on growth. *Cambridge Journal of Economics 40*(6), 1581–1608.

Reinert, K. A. (2025). *The Lure of Economic Nationalism: Beyond Zero Sum*. London: Anthem.

Ribeiro, R. S. M., J. S. L. McCombie, and G. T. Lima (2017). A reconciliation proposal of demand-driven growth models in open economies. *Journal of Economic Studies 44*(2), 226–244.

Ricardo, D. (1821). *Principles of Political Economy and Taxation* (3rd ed.). London: John Murray. Reprinted in The Works and Correspondence of David Ricardo, vol. I, ed. P. Sraffa, Cambridge, UK: Cambridge University Press, 1951.

Robinson, J. (1947). *Essays in the Theory of Employment* (2nd ed.). Oxford: Basil Blackwell.

Robinson, J. (1978). *Contributions to Modern Economics*. New York: Academic Press.

Rodrik, D. (2021). A primer on trade and inequality. *IFS Deaton Review of Inequalities* (November 21). https://ifs.org.uk/inequality/a-primer-on-trade-and-inequality/.

Romero, J. P. and G. Britto (2017). Increasing returns to scale, technological catch-up and research intensity: endogenising the Verdoorn coefficient. *Cambridge Journal of Economics 41*(2), 391–412.

Romero, J. P. and J. S. McCombie (2016). Differences in increasing returns between technological sectors: a panel data investigation using the EU KLEMS database. *Journal of Economic Studies 43*(5), 863–878.

Ruiz Nápoles, P. and J. Castañeda León (2025). Trade between advanced and underdeveloped countries: a pasinetti model – Mexico–US 2013–2018. *Review of Keynesian Economics 13*(2), 289–312.

Sasaki, H., R. Sonoda, and S. Fujita (2013). International competition and distributive class conflict in an open economy Kaleckian model. *Metroeconomica 64*(4), 683–715.

Schröder, E. (2020). Offshoring, employment, and aggregate demand. *Journal of Evolutionary Economics 30*(1), 179–204.

Serrano, F. (1995). Long period effective demand and the Sraffian supermultiplier. *Contributions to Political Economy 14*, 67–90.

Serrano, F. and F. Freitas (2017). The Sraffian supermultiplier as an alternative closure for heterodox growth theory. *European Journal of Economics and Economic Policies: Intervention 14*(1), 70–91.

Setterfield, M. (2002). A model of Kaldorian traverse: cumulative causation, structural change and evolutionary hysteresis. In M. Setterfield (Ed.), *The Economics of Demand-Led Growth: Challenging the Supply-Side Vision of the Long Run*, pp. 215–33. Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing.

Setterfield, M. and J. Cornwall (2002). A neo-Kaldorian perspective on the rise and decline of the Golden Age. In M. Setterfield (Ed.), *The Economics of Demand-Led Growth: Challenging the Supply-Side Vision of the Long Run*, pp. 67–82. Cheltenham, UK: Edward Elgar.

Setterfield, M. and S. Ozcelik (2018). Is the balance of payments constrained growth rate time-varying? exchange rate over valuation, policy-induced recessions, deindustrialization, and long run growth. In P. Arestis (Ed.), *Alternative Approaches in Macroeconomics: Essays in Honour of John McCombie*, pp. 331–353. Cham: Springer International Publishing.

Shenai, N. and J. P. Meltzer (2025). How a pivot on US tariffs could deliver a better outcome on trade. *The American Enterprise* (June 16). https://theamericanenterprise.com/how-a-pivot-on-us-tariffs-could-deliver-a-better-outcome-on-trade/, accessed July 6, 2025.

Smith, A. (1776). *An Inquiry Into the Nature and Causes of the Wealth of Nations*. Reprinted, Chicago: University of Chicago Press, 1976.

Steindl, J. (1952). *Maturity and Stagnation in American Capitalism*. Oxford: Blackwell.

Stockhammer, E., E. Hein, and L. Grafl (2011). Globalization and the effects of changes in the functional income distribution on aggregate demand in Germany. *International Review of Applied Economics 25*(1), 1–24.

Stolper, W. and P. Samuelson (1941). Protection and real wages. *Review of Economic Studies 9*(1), 58–73.

Sturn, S. and T. van Treeck (2013). The role of income inequality as a cause of the Great Recession and global imbalances. In M. Lavoie and E. Stockhammer (Eds.), *Wage-led Growth: An Equitable Strategy for Economic Recovery*, pp. 125–152. Basingstoke, UK: Palgrave Macmillan.

Szirmai, A. and B. Verspagen (2015). Manufacturing and economic growth in developing countries, 1950–2005. *Structural Change and Economic Dynamics 34*, 46–59.

Taylor, L. (1983). *Structuralist Macroeconomics: Applicable Models for the Third World*. New York: Basic Books.

Thirlwall, A. P. (1979). The balance of payments constraint as an explanation of international growth rate differences. *Banca Nazionale del Lavoro Quarterly Review 32*(128), 45–53.

Thirlwall, A. P. (1983). A plain man's guide to Kaldor's growth laws. *Journal of Post Keynesian Economics 5*(3), 345–358.

Trigg, A. B. (2020). Thirlwall's law and uneven development under Global Value Chains: a multi-country input-output approach. *Journal of Economic Structures 9*. Article 4, https://journalofeconomicstructures.springeropen.com/articles/10.1186/s40008-020-0178-7.

Verdoorn, P. J. (1949). Fattori che regolano lo sviluppo della produttività del lavoro. *L'Industria 1*, 3–10.

Williams, J. H. (1929). The theory of international trade reconsidered. *Economic Journal 39*(154), 195–209.

Woodgate, R. (2023). FDI-led growth models: Sraffian supermultiplier models of export platforms and tax havens. *European Journal of Economics and Economic Policies 20*(3), 491–514.

Wray, L. R. (2024). *Modern Money Theory: A Primer on Macroeconomics for Sovereign Monetary Systems* (3rd ed.). Cham, Switzerland: Palgrave Macmillan.

Imprint

Publisher
Macroeconomic Policy Institute (IMK) of Hans-Böckler-Foundation, Georg-Glock-Str. 18,
40474 Düsseldorf, Contact: fmm@boeckler.de, https://www.fmm-macro.net

FMM Working Paper is an irregular online publication series available at:
https://www.boeckler.de/de/fmm-working-paper-22457.htm

The views expressed in this paper do not necessarily reflect those of the IMK or the Hans-Böckler-Foundation.

ISSN 2512-8655

This publication is licensed under the Creative commons license:
Attribution 4.0 International (CC BY).

Provided that the author's name is acknowledged, this license permits the editing, reproduction and distribution of the material in any format or medium for any purpose, including commercial use.
The complete license text can be found here: https://creativecommons.org/licenses/by/4.0/legalcode
The terms of the Creative Commons License apply to original material only. The re-use of material from other sources (marked with source) such as graphs, tables, photos and texts may require further permission from the copyright holder.