

Full Employment, Open Economy Macroeconomics, and Keynes' General Theory: Does the Swan Diagram Suffice?

Paul Davidson¹⁺

Working Paper No. 35

ABSTRACT

This paper provides critical comments on the Peter Temin - David Vines promotion of the basic Swan Diagram as (1) a policy tool to encourage any individual debtor nation experiencing balance of payment deficits to reduce its exchange rate in order to expand exports and reduce imports and (2) the Swan Diagram as a simple model for understanding Keynes's General Theory for an Open Economy. This paper explains that the Swan Diagram is completely incompatible with Keynes's analysis. Instead Keynes advocated that the onus should be placed on creditor nations to correct international payments imbalances and thereby promote economic expansion internationally. Keynes warned against any deficit nation adopting a policy that tries to achieve a balance in its international payments by following any policy designed to reduce imports and increase exports. Such a policy sends a contractionary force onto the international economy and tends to injure all trading partners.

JEL codes: B3, E12, E42, E61, F33, F41

Key words: Swan Diagram, balance of payments, fiscal policy, neoclassical Synthesis
Keynesianism, Post Keynesianism.

¹ Holly Chair of Excellence in Political Economy Emeritus, University of Tennessee. pdavidson@utk.edu.

+ A response to these comments by Temin and Vine can be found at:

<http://ineteconomics.org/ideas-papers/research-papers/comments-on-paul-davidsons-full-employment-open-economy-macroeconomics-and-keynes-general-theory-does-the-swan-diagram-suffice>.

The fundamental principles underlying Keynes' liquidity theory and his "Keynes Plan" proposal for an international payments system that he presented at the 1944 Bretton Woods meeting indicate that free trade, flexible real exchange rates and free international capital funds mobility can be incompatible with the economic goal of achieving global full employment and rapid economic growth.

Temin and Vines [2013], on the other hand, are well known for championing the use of the Swan diagram to explain how an open economy nation can achieve full employment and a balance in international payments by developing specific policies for unilaterally changing its real exchange rate and its domestic government fiscal deficit policy. The Swan Diagram analysis presumes free trade and flexible real exchange rates while ignoring any international capital funds mobility complications.

Temin and Vines claim that if a nation is experiencing a persistent international payments deficit, the Swan diagram indicates to this debtor nation's policy makers that if they unilaterally reduced the nation's real exchange rate by a specific amount, the nation will obtain a more favorable balance of trade between imports and exports and thereby balance the nation's international payments position (what Swan called an "external balance") while simultaneously adding stimulus to its domestic production.

In addition, the Swan diagram indicates that a specific government deficit spending policy should be unilaterally adopted along with its "external balance" exchange rate devaluation policy to assure the nation simultaneously achieves full employment (what Swan labeled "internal balance"). If policy makers in each nation takes the Temin-Vines Swan diagram advocacy seriously and develop independent policies, guided by the Swan diagram, then the

Temin-Vines approach seems to suggest that every nation will achieve full employment and strong economic growth within a global system of free trade and flexible exchange rates.

This paper will explain why the Temin and Vines analysis (1) is not applicable to Keynes's *General Theory* analysis and is therefore inconsistent with Keynes' view of the effects of free trade and flexible exchange rates; (2) is not helpful in understanding what is required to solve international payments imbalances among all nations in the global economy; and (3) ignores intrinsic analytical defects in the Swan Diagram that if recognized would make it obvious that the Swan analysis cannot be a practical tool to help a nation develop policies that will achieve simultaneously full employment and a balance in its international payments.

In the *General Theory*, Keynes explicitly discussed the problem of a government adopting a policy to improve its balance of trade in order to help stimulate the domestic economy while simultaneously improving its international payments position. Keynes recognized that a serious economic problem could unfold if a nation such as Britain (where trade is a significant part of the economy) attempted to improve (make more favorable) its balance of trade by unilaterally adopting a policy that reduced demand for imports relative to export demand and therefore also helped stimulate domestic firms to increase production and employment.

As Keynes stated [1936, pp 338-339]:

A favorable balance [of trade], provided it is not too large, will prove extremely stimulating; whilst an unfavorable balance may soon produce a state of persistent depression....the reader must not reach a premature conclusion as to the *practical* policy to which our argument leads....The fact that the advantage our country gains from a [more] favorable balance is liable to involve an equal disadvantage to some other country ... means not only that great moderation is necessary....but also that an immoderate policy

may lead to a senseless international competition for a favorable balance which injures all alike.

Although Trevor Swan [1955] claimed that his Swan Diagram analysis is based on Keynes's *General Theory*, in reality the Swan analysis is, in principle, potentially in conflict with this Keynes incompatibility thesis analysis where Keynes suggests that a policy to help stimulate the economy by improving a nation's balance of trade can result in "senseless international competition" that injures all trading partners. Despite Swan's claim that his diagram is drawn from Keynes's theory, the above Keynes quote implies that the basic Swan diagram is not compatible with Keynes's analysis. Instead it can be shown that Swan's diagram analysis is essentially a version of classical economic theory that presumes global full employment is an inevitable outcome in a global economy that promotes free trade with a flexible exchange rate system.

In classical trade theory, as in Swan's analysis, the effect of any change in real exchange rates depends on the implicit assumption that this change in the exchange rate price produces a simple gross substitution effect between exports and imports, while any income effect of an exchange rate devaluation policy on trading partners and the domestic economy can be ignored as being insignificant or at least too small to have an important macro impact.

In terms of the actual Swan diagram a reduction in nation A's real exchange rate is presumed to merely induce a movement along the Swan diagram's independent external balance function due to a gross substitution effect that increases the demand and monetary value of exports and reduces the demand and monetary value of imports by improving the international competitiveness of nation A's industries vis-a-vis foreign based industries. There is no income effect in the Swan diagram analytical system. An income effect can ultimately induce a shift of

the entire external balance function as (1) foreigners suffer a reduction in incomes as Nation A's market demand for imports declines that then (2) induces foreign nations to undertake responsive policy changes to try to, at a minimum, regain their loss in export demand and reduce their demand for imports from Nation A.

In essence, Swan's diagram approach merely added some Keynesian-like terminology to the basic classical general equilibrium analysis to achieve what Joan Robinson and others has called "Bastard Keynesianism."

Although Temin and Vines [2014] have claimed to show "Why Keynes Is Important Today", their analysis perpetuates this unfortunately incorrect classical [Walrasian general equilibrium] microfoundation for a macroeconomic interpretation of Keynes's *General Theory* with "the result that its teaching is misleading and disastrous if we attempt to apply it to the facts of experience" [Keynes, 1936, p.3].

Temin and Vines are strong champions for the Swan Diagram as a useful tool to help readers understand what they believe is Keynes's very complex macroeconomic theory for an open economy – a theory that would be applicable to the 21st century global economic system in which we live. They claim [2013, p.258] that the advantage of using the Swan Diagram for understanding open economy macroeconomics is "similar to the Hicks' IS/LM diagram which simplifies Keynes' *General Theory* for a closed economy into a diagram about two markets....to clarify the underlying complexity of Keynes' *General Theory* for many people. The Swan Diagram did the same thing for what happens in an open economy."

Unfortunately, as we will demonstrate, Temin and Vines have adopted an analytical model that is completely incompatible with Keynes' explicit explanation of the basis of his *General Theory*. Accordingly Temin and Vines advocacy of the Swan Diagram as a basis for reducing the

complexity of the *General Theory* to a tool that provides guidelines for any nation independently to change its the real exchange rate and fiscal spending decisions to achieve full employment and an international payment balance can be subjected to some fundamental criticisms.

Temin and Vines were invited to respond to an earlier draft of this critical analysis of mine regarding the Temin and Vines' claim that the Swan Diagram as a tool to understanding Keynes's theory and real world economic policy choices. They responded on October 22, 2015, with pages of comments stating why my critical analysis of the Temin –Vines claims is “either irrelevant or incorrect” [Temin and Vines, 2015, p.1].

In the early sections of this paper, I provide my original critical analysis of Temin and Vines' position. In the next to last section of this paper, I respond specifically to their early (October 22, 2015) criticisms of my comments on the Temin and Vines analysis. In a Postscript at the end of this paper, I respond to their latest (November 22, 2015) criticisms of my views on their claims. I then leave it to the objective reader to decide whose argument is “irrelevant or incorrect.”

Hicks' IS/LM Analysis and Keynes' *General Theory*

In their attempt to link the Swan diagram to Hicks' simplification of Keynes' *General Theory* via Hicks' IS/LM diagram, Temin and Vines have neither recognized nor acknowledged that more than three decades ago Hicks had second thoughts about whether his IS/LM diagram analysis did “clarify the underlying complexity” of Keynes' *General Theory*. Hicks [1980-81] finally explicitly repudiated the IS/LM diagram as a proper representation of Keynes's *General Theory*. I believe that the Swan diagram suffers from similar flaws as the Hicks' IS/LM diagram and is therefore not a valid simplification of either Keynes's *General Theory* for an open economy or a useful tool for designing policies to assure global full employment of resources in

the economic system in which we live.

Since I played a significant role in convincing Hicks of the errors of the IS/LM diagram analysis representation of Keynes's theory, I should explain why Hicks ended up accepting my argument that the IS/LM diagram is not a representation of Keynes' theory. I will then explain why Temin and Vines have completely misinterpreted Keynes's *General Theory* and therefore why their use of the Swan diagram to simplify Keynes' macroeconomic theory for an open economy should suffer the same fate as Hicks's repudiation of the IS/LM diagram.

I became friends with Hicks in 1971 at a six-day meeting of the International Economics Association conference on the microfoundations of macroeconomics where Hicks was the organizer of the conference. My presentation at this conference [Davidson, 1977, pp.313-17] emphasized the importance of money contracts (rather than real contracts) and liquidity in understanding the operation of a market oriented capitalist economy¹.

In a discussion at the end of the conference I emphasized that a classical Walrasian-type 'general equilibrium' based model was not designed to, and could not, answer the interesting macroeconomic questions of the effect of the use of money and monetary payment accounts in determining, the level of gross domestic production and unemployment. If economists insist on basing Keynes's macroeconomic theory analysis on an incompatible Walrasian general equilibrium micro theory base we would not make any progress in macroeconomic theory development. Instead we would regress to the disastrous pre-Keynesian solutions [Davidson, 1977, p. 392].

At the end of the conference Hicks cemented our friendship when he informed me that the microfoundations of his approach to macroeconomics was closer to mine than to anyone else at the conference (where other participants included future Nobel Prize winners Koopmans and

Stiglitz). Over the following years, Hicks and I continued to discuss the microfoundations of Keynes's general theory analysis and my [Davidson, 1965] integration of Keynes's [1937] finance motive for liquidity into the *General Theory*.

My analysis of Keynes' finance motive demonstrated that changes in planned investment spending at each level of interest rate, i.e., a shift in the IS curve (an aggregate income effect), demonstrated an interdependence of the IS function with the LM function as the demand for money to finance the planned investment spending changed at each possible interest rate (shifting the LM curve). If, for example, entrepreneurs change their views and become more optimistic and expect higher future payoffs of any planned investment project, then the IS function will shift to the right (outwards) to indicate more planned investment spending at every possible interest rate. The resulting increase in the demand for money to "finance" the larger planned investment spending at any interest rate will result in a leftward shift (inwards) of the LM function as the demand for money increases relative to the assumed exogenously given quantity of money supplied. Consequently Hicks' analysis of the intersection of immovable independent IS and LM functions to determine the equilibrium outcome of Hicks's IS/LM diagram was not an adequate representation of either Keynes's theory or possible events in the world of experience.

Furthermore, if a central bank announced that it was changing its interest rate policy in an attempt to affect aggregate demand, then this announcement would typically induce changing expectations by entrepreneurs about future profitability outcomes of investment projects (as long as uncertainty regarding the future is important factor in forming expectations). In other words, any central bank announced interest rate policy changes can change profit expectations and result in a shifting of the IS curve that, via the finance motive, will induce a simultaneous shift in the LM curve.

By 1976 the continued discussions between Hicks and myself led Hicks [1976, pp.140-1] to admit that the IS/LM model was a “potted version” of Keynes’s theory. By then, however, I was beginning to work on what would be my analysis of Keynes’s uncertainty concept as involving probability theory analysis where probability distribution functions involving expected future payouts from current investment decisions changed over calendar time in a nonpredictable manner (a nonergodic stochastic system). Hicks and I would continuously discuss my still forming notions regarding a nonergodic uncertain future that finally I published [Davidson, 1982-1983].

By 1979, I had convinced Hicks [1979, p.38] to augment his analysis by arguing that economics is embedded in calendar time and a relationship that held in the past could not be assumed to hold in an uncertain future. Finally, by 1980, while I was editor of the *Journal of Post Keynesian Economics*, I was able to induce Hicks to write an article for the Journal entitled “ISLM: An Explanation” In this article Hicks wrote [1980-81, p. 138-139]: “As time has gone on, I have myself become dissatisfied with it [the IS/LM diagram]” . In this article Hicks admitted this IS/LM diagram simple formulation was not a proper representation of Keynes’s *General Theory* approach.

After Hicks read my published article [Davidson, 1982-3] explaining how the Keynes’s uncertainty concept can be defined in terms of a nonergodic stochastic process, he wrote to me a letter dated February 12, 1983. In this letter Hicks stated “You have now rationalized my suspicions and showed me that I missed a chance of labeling my own view as nonergodic. One needs a name like that to ram a point home.” With this declaration, Hicks buried his IS/LM analysis forever.

In the rest of this paper, I hope I can convince the reader that Temin and Vines should recognize that the Swan diagram, like the IS/LM diagram, is flawed and is neither a representation of Keynes' *General Theory* nor a tool to understand possible change in policy effects on the money contracting economy in which we live. Among other things, it is possible to demonstrate that the Swann Diagram external balance function is not a stable independent function, but it is subject to shifting if one nation adopts a policy of changing its exchange rate to improve its balance of trade at the expense of its trading partners.

The Swan Diagram Flaws

The Swan diagram claims to provide an analysis of how policy-makers in a single nation, by devaluing the real exchange rate, will improve the balance of trade that not only contributes to achieving an external balance in the nation's international payments but also towards achieving, with proper fiscal policy deficits, an internal balance with the point of effective demand for domestic production at full employment². Temin and Vines have proclaimed that "the most important lesson of the Swan Diagram [is that] internal balance and external balance must be thought about at the same time" [Temin and Vines, 2013, p. 3]. Their view is that the Swan diagram provides the basis for a single Nation A to achieve internal and external balance when the nation's policy decision makers simultaneously making a proper choice of (1) a fiscal deficit and (2) a real exchange rate policy. This dual policy decision by Nation A will be made completely independent of any discussion with policy makers in Nation A's trading partners and without any recognition of the possible international repercussions on this nation's trading partners. The stability of the external balance and internal balance functions in the Swan diagram is based on an implicit presumption, namely that nation A's policy change of the real exchange rate effect on trading partners' exports and imports will not induce the trading partners to make a policy

decision to offset the impact on their economy. The stability of the external balance function of the Swan diagram requires that trading partners' demand and supply functions in international markets are unchanged which, in turn, requires an implicit *ceteris paribus* presumption.

Temin and Vines ultimately recognized this drawback of the Swan diagram. For most of their analysis, however, they basically ignore this problem of a change in the real exchange rate leading to the possibility of retaliation by the nation's trading partners and a possible exchange rate war that is costly to all nations.

In the appendix to their book, however, Temin and Vines suggest [2013, p. 265] that the basic Swan diagram analysis is really applicable only to very small open economies whose exports and imports are basically insignificant to the world's international trading volume. Given this caveat, the simple Swan Diagram should be applicable only to nations such as Luxembourg in the 21st century global economy. Under these circumstances, how can the basic Swan Diagram really be a valuable tool for either (1) understanding the macroeconomic theory of Keynes that is applicable to all large as well as small open economies or (2) developing an independent real exchange rate policy that assures global full employment in our world of experience?

In the appendix to their book, Temin and Vines [2013, p. 265] state that the basic Swan diagram model analysis has to be modified whenever "we extend the model to large countries, where each country can no longer be considered in isolation." In such "modified" models involving "large countries", Temin and Vines [2013, p. 265] finally note that one nation's attempt to change the exchange rate to make its industries more competitive to achieve a more favorable external balance "would mean that the other country would not have a competitive exchange rate...the second country would show it could obtain internal balance if it were to have a high domestic demand and an external deficit... equal to the first country's surplus." If the second

country cannot “maintain such an external deficit...it may have to seek a different exchange rate ...that would make it more competitive” [Temin and Vines, 2013, p. 266]. In other words, the trading partners might engage in an exchange rate war, which, as Keynes argued, would harm all trading partners. Foreign trade would become a means of trying to gain a competitive edge for domestic industries vis-à-vis foreign nations’ industries. Nations would attempt to use free trade in a flexible exchange rate system to force surplus domestic production that cannot be readily absorbed domestically onto foreigners at the expense of production in the foreigners’ nations.

Accordingly, once an attempt is made to apply the Swan diagram analysis to nations other than ones with very small economies, the analysis may require the recognition of interdependent external balance functions among trading partners. Hence achieving external balance cannot be readily achieved by use of a simple Swan diagram with stable independent external balance curves for each nation.

Indeed this view of achieving internal and external balance simultaneously solely via a choice of domestic government policies without taking into account possible international repercussions and international institutions is a fatal flaw in the Swan diagram analysis -- a flaw that is only barely recognized by proponents of the Swan diagram such as Temin and Vines. When they finally recognize that nation A’s unilateral policy of devaluing the exchange rate may induce a reaction by Nation A’s trade partners, then Temin and Vines [2013, p.266] suggest that one should go on to analyze the problems via the “Prisoners’ Dilemma” of game theory where there may be no unique simple good solution for all trading nations. Instead, each nation must decide whether to try to cooperate with its trading partners to achieve external balance or to “engage in ‘finking’ where each nation goes it alone without caring what happened to the trading partners”[Temin and Vines, 2013, p. 266]. But “finking” can be detrimental to all!

If nations are to cooperate, then the Swan diagram provides no guidelines as to how to achieve cooperation internationally for assuring internal and external balance for all nations. Keynes, on the other hand, has already suggested that there is a better solution to this potential exchange rate war or “Prisoner’s Dilemma” solution. It is for nations to cooperate by setting up an international institution that provides agreement rule procedures for solving any nation’s international external balance problems without creating external balance problems for other nations.

In fact, Keynes argued that the achievement of domestic prosperity by a competitive pursuit of foreign markets is wrong. Instead “the opposite holds true. It is a policy...unimpeded by international preoccupations, and of a national investment programme directed to an optimum level of domestic employment which is twice blessed in the sense that it helps ourselves and our neighbours at the same time And it is the simultaneous pursuit of these policies by all countries together which is capable of restoring economic health and strength internationally” [Keynes, 1936, p. 349].

In other words, nations should strive for a cooperative international system where no nation has to be preoccupied by possible international complications while pursuing a policy to stimulate domestic demand for production to achieve full employment.

From an analytical standpoint, however, the Swan diagram analysis promotes the view that each nation, in its own self-interest, should pursue expanding sales in foreign markets to assure sufficient global demand for domestic production not being absorbed at home. This Swan diagram conclusion relies on several underlying assumptions that are not applicable to a system of free trade in our world of experience. Accordingly, the Swan diagram may not be applicable even to small open economies.

The implicit faulty presuppositions of the Swan diagram involve (1) allowing for only gross substitution effects and not income effects when analyzing a change in the real exchange rate on the balance of international payments; (2) ignoring Keynes's warning that by encouraging the search for a policy of obtaining a more favorable balance of trade without recognizing that such a policy may cause an injury to a nation's trading partners – such a policy goal is likely to induce retaliatory policies by foreigners that ends up injuring all nations, (3) the Swan analysis of policy proposals is not compatible with what Keynes advocated via his “Keynes Plan” presented at the Bretton Woods meeting and (4) the Swan Diagram puts the onus of ending an imbalance in international payments on the debtor nation(s).

The “Keynes Plan” was designed to ensure full employment in all open economies that adopt domestic fiscal policy deficits to achieve what Swan labeled ‘internal balance’ at full employment while an international institution is created to assure that the onus of correcting international payment imbalances is placed on creditor nations. Then the fiscal policies adopted by each nation will not be impeded by international preoccupations affecting their external balance. For Keynes the necessary institution was an international clearing union that had rules and policy procedures that assured that persistent deficits in any nation's balance of international payments would not occur. There would be no market incentives to engage in a possible exchange rate war to gain markets for the products of a nation's industries.

Swan vs. Keynes

In advocating his Swan diagram as a policy analysis tool, Trevor Swan [1955] wrote: “Since Keynes published *The General Theory* in 1936, it has been widely accepted that the two fundamental propositions of a full employment policy are a) that incomes and employment depend on the level of spending; and b) that there is no automatic mechanism to keep spending

near its full employment level, without conscious action by economic and financial authorities. But the balance of payments equally depends on the level of spending. Must it be only a happy chance if the 'internal balance' and 'external balance' levels of spending coincide?"

The Swan diagram proposes to show a relationship between how changes in the real exchange rate and changes in the total domestic expenditures on domestic produced goods and services (via changes in the fiscal deficit) must be harnessed simultaneously together to assure the provision of both external and internal balance without hoping for a "happy chance."

In presenting his diagrammatic analysis Swan was following the accepted idea that to achieve two economic objectives, a nation must have two different policy instruments. The questions I examine in this paper are: (1) whether the relationship between the two policy principle instruments claimed by the Swan diagram is universally valid (2) can policy decision goals be met independently of trading partners policies towards achieving external balance, and never be harmful to other nations external balance and (3) are there simpler and easier cooperative policy variables that can be used for achieving both internal and external balance for all economies in an open global economic system.

Keynes's proposal, i.e., the Keynes Plan, presented at Bretton Woods, provided an international solution for achieving external balance between all trading partners and therefore freeing nations to solely concentrate on adopting a deficit fiscal policy to achieve full employment prosperity. If trading partner nations were to adopt the Keynes Plan there would be no need for any nation to fiddle with its real exchange rate to try to achieve an external equilibrium and then having to worry about trading partners' retaliation policy that can result in an exchange rate war.

Further Examining the Faulty Analytical Basis of The Swan Diagram

What apparently intrigued Temin and Vines is that the simple Swan diagram embraces two markets and two variables. The first market involves the total demand for domestically produced goods [GDP] which is usually expressed as:

$$Y = C + I + G + (X-M) \quad (1)$$

Where Y is aggregate domestic production, C is aggregate consumption expenditures by domestic households, I is gross investment spending by domestic enterprises, and G is total domestic government expenditures. X is the total market demand for exports in monetary terms and M is the total market monetary demand for imports bought. Since domestic households, enterprises and government may spend a portion of their total expenditures on things produced abroad, and even domestic production to meet export demand may have components that were produced in foreign nations, then the money value of total imports (M) must be subtracted from C, I, G, and even X to obtain the total market monetary value of goods produced domestically. That is the basis of equation (1), which is a definitional identity.

The second market is the market for meeting international money contractual payments in a specific currency (the exchange rate market) where the latter depends on the balance of trade *and* the international flow of capital funds. Swan emphasized the balance between exports and import values and did not examine the question of the net flow of capital funds between nations in his analysis. Initially we will follow Swan's lead and ignore complications due to the flow of capital funds across national boundaries. We shall, at a later point in this article deal with the possibility that the flow of capital funds across national borders can cause economic problems for the global community and suggest an institutional arrangement to help prevent an international flow of capital funds creating global economic problems –a problem such as the global financial

crisis of 2008.

In the simple Swan analysis where international capital flows are ignored

$$B = (X - M) \quad (2)$$

where B is the nation's international monetary balance of payments. On the horizontal axis of the Swan diagram is the measure of total demand for *domestic* production by consumer households, business firms, governments and makers of products and services for export sales. On the vertical axis is the real exchange rate, i.e., the nominal exchange rate adjusted for the ratio of domestic prices vis-a-vis foreign prices. A fall in the real exchange rate can occur if the nominal exchange rate declines with no change in money wages (and any other costs of production) domestically or if there is a fall in domestic money-wages and therefore costs and prices domestically relative to costs and prices of foreign produced goods and services.

The external balance function of the Swan diagram is downward sloping because it is based on the classical theory assumption that a reduction in the real exchange rate-price, via a large gross substitution effect and the absence of any significant income effect, assures that the products of domestic industries become more competitive substitutes for the goods and services produced abroad for both domestic spenders and spenders in foreign markets. To the extent this "more competitive" result induces only a substitution effect, there should be more physical exports sold abroad and less physical imports purchased domestically [and vice versa in each trading partner nation].

Thus Temin and Vines state that if the real exchange rate is lowered, then the Swan diagram shows that if "there are increased exports X or reduced imports, M, then there is a net increase in exports (X-M), which will add to demand for domestic goods and so domestic production" [Temin and Vines, p. 261]. Note this assumes that exports and imports are excellent

gross substitutes that depend solely on the competitiveness of domestic business firms vis-a-vis foreign producers. As we have already noted there is assumed to be no income effect on the export demand for this nation

An important question that Swan merely assumes away is whether this presumed substitution effect change due to a policy that reduces the real exchange rate results in an increase in the domestic monetary value of exports minus imports, i.e., the monetary value of net exports for the nation's economy. The Swan diagram merely assumes that as the price of domestic goods in export markets declines relative to the price of foreign produced goods in these markets and the price of foreign produced products rise for domestic buyers, foreigners will spend more in terms of domestic currency to buy a greater quantity of products and services from domestic industries (as a substitute for products produced in their nation) while domestic residents will spend less domestic money for buying a smaller quantity of imports of goods and services and spend more on domestic products as a substitute for foreign produced goods. In other words, it is assumed that the monetary value of exports minus imports must increase as the real exchange rate declines.

For the reduction in real exchange rate to actually increase the monetary value of exports minus imports (i.e., net exports), however, requires that the Marshall-Lerner condition is applicable to the specific nation's monetary value of exports minus imports. The Marshall Lerner condition is that the sum of the absolute values of the price elasticity for imports plus the price elasticity for exports must exceed unity (assuming no significant change in the income of buyers in each nation). If, and only if, the Marshall-Lerner condition is applicable can a reduction in the real exchange rate result in a greater domestic monetary value of net exports [i.e., $X-M$]. If this is the case then the external balance account curve in the Swan diagram will be downward sloping.

If, however, the Marshall-Lerner condition does not apply, then the price elasticities for exports plus imports sum to less than unity. Under this condition a decline in the exchange rate reduces the monetary value of net exports.

Accordingly, if the Marshall-Lerner condition is not applicable, then it would require an increase in the real exchange rate to improve the monetary value of net exports and therefore the external balance curve of the Swan diagram would apparently be upward sloping. In such a case, in the absence of the Marshall-Lerner condition, there might be no possible intersection between an upward sloping external balance curve and the upward sloping internal balance curve in the Swan diagram. In the absence of the Marshall-Lerner condition, a simple Swan diagram analysis could imply that there may be no fiscal policy and exchange rate policy that can provide internal and external balance simultaneously. This result is avoided by Temin and Vines implicitly assuming a very high degree of substitution between exports and imports and therefore large price elasticities of demand for exports and for imports!

Empirical studies have indicated that in many situations the Marshall-Lerner condition is not applicable when the exchange rate depreciates. Then the immediate short-run effect of a reduction in the real exchange rate is a deterioration in the balance of payments even if a greater physical quantity of domestic products and services are sold to foreigners and a smaller physical quantity of imports are bought by domestic residents.

In other words, it is an empirical fact that in the short run the Marshall-Lerner condition is often not applicable. This has led many orthodox economists to hypothesize that a depreciation of the real exchange rate results in a J -curve, where in the short run the Marshall-Lerner condition does not apply and therefore a decline in the real exchange rate results in a worsening of what Swan calls the external balance in monetary terms as an immediate decline in the monetary value

of net exports is experienced. In the longer run, however, economists merely assume that exports are always excellent substitutes for the products of foreign producers and imports are excellent substitutes for the products of domestic producers so that when export prices fall relative to import prices, the long run price elasticities must be close to infinite and therefore the value of net exports will always, *in the long run*, increase as the J curve turns up.

Nevertheless, Ben Bernanke, the former Chairman of the Federal Reserve System, has written (in an economic textbook) that “a fall in the exchange rate tends to reduce [the value] of net exports in the very short run ...the analysis of a change in the real exchange rate must assume that the time period is long enough so that the Marshall Lerner condition holds... Keep in mind, though, that this assumption may not be valid for shorter periods... and in some cases even for several years” [A. B. Abel and B.S. Bernanke, 1992, p. 508]. How many calendar years must pass before the “time period is long enough”?

Accordingly a potential basic flaw in any Swan diagram analysis is the presentation of the external balance curve as downward sloping for this presumes the Marshall-Lerner conditions hold in both in the very short run and the long run. If it does not hold in the short run, then for “several years” there may be no mix of domestic government policies alone that can ever assure internal (full employment) balance and external (payments) balance occurs simultaneously in the short run. Instead, the decline in the real exchange rate might create an international monetary deficit for the nation devaluing its currency thereby worsening its international payments position. In the long run we are assured that the Marshall-Lerner condition will hold but, as Keynes once noted, “In the long run we will all be dead.”

The implicit assumption of the Marshall-Lerner condition holding, however, is a relatively mild limitation on the Swan Diagram analysis. Changes in relative prices and fiscal deficits can

induce income effects on the trade balance of nations, which will feed back into the value of the balance of payments. Accordingly, Keynes argued that achieving external balance with domestic full employment for all nations in an open global economy will require accepted, coordinated, cooperative rules of behavior for all international trading partners.

Income Effects

Time is a device that prevents everything from happening at once. Accordingly, while one is waiting for the longer run Marshall-Lerner conditions to kick in, each nation's economy is growing or, at least experiencing changes in gross national income due to the business cycle. When a nation's gross income is changing this will affect a nation's demand for imports independent of the existing exchange rate.

Unfortunately the Swan diagram tends to ignore any significant income effects on the external balance. For example, if a nation increases its fiscal deficit spending to stimulate domestic employment, then through the income elasticity of demand for imports, there will be an increase in the monetary value of net imports even if there is no change in the real exchange rate. A fiscal stimulus policy that increases domestic employment and income means an increase in consumption spending of domestic households; some portion of this household spending would be to buy additional imports. This could provide, *ceteris paribus*, a shift in the external balance function of the Swan Diagram.

Thirlwall's Law

In our world of experience as economies grow over a period of calendar time, export-import balances often depend primarily on income elasticities and income effects, and only secondarily on the Marshall-Lerner effect of price elasticities and/or gross substitution effects. Harrod [1933] had recognized that any increase in the aggregate income of a nation will increase

the nation's imports by something we now call the marginal propensity to import –even if there is no change in the real exchange rate.

A.P. Thirlwall [1979] developed this marginal propensity to import effect for each trading partner into a relationship called Thirlwall's Law. The law states that if the relative prices in the two countries remain unchanged, thereby holding the real exchange rate constant and allowing substitution effects to be ignored, then the entire analysis of the external balance can be based on income elasticity effects.

In Thirlwall's model the export and import functions are represented by:

$$X_a = (P_d/P_f)^z Y^{erw} \quad (3)$$

$$M_a = (P_d/P_f)^u Y^{ea} \quad (4)$$

where X_a are exports and M_a are imports for nation A, (P_d/P_f) is the ratio of domestic prices to foreign prices expressed in terms of the domestic currency, z is the price elasticity of demand for A's exports, u is the price elasticity of demand for imports in A, ea is the income elasticity of demand for imports, and erw is the income elasticity of demand for A's exports from the rest of the world.

If we assume no change in relative prices for imports and exports, i.e., no change in the real exchange rate, then for nation A the growth in the value of imports to be equal to the growth in the value of exports over time (to maintain an external balance) requires that

$$[y_a/y_{rw}] = [e_{rw}/e_a] \quad (5)$$

This is Thirlwall's Law which indicates that the ratio of the growth in income of country A (y_a) to the growth in income of the rest of the world (y_{rw}) is equal to the ratio of the income elasticity of demand for A's exports to the rest of the world (e_{rw}) to the income elasticity of demand of A for imports (e_a), if nations are to maintain an external balance in an era of free trade.

The need to recognize the income effects explicit in Thirlwall's law is significant in assessing the validity of the Swan Diagram. If for example, nation A starts from a situation of external balance and wishes to remain in this external balance, then, *ceteris paribus*, the rate of domestic production growth of nation A is constrained by Thirlwall's law so that if the income elasticity of demand for a nation's exports is less than its income elasticity of demand for imports, then the nation's rate of income growth must be slower than its trading partners growth rate.

If this rate of income growth for nation A is less than the domestic growth of the labor force or increases in productivity, then this maintenance of external balance must imply the potential for the lack of internal balance and an increase in domestic unemployment. Facing rising unemployment rates, if the government of nation A embarks on a deficit financing stimulus program to move towards a more full employment internal balance, then the increased employment and income in A will, via the marginal propensity to import, push the economy out of external balance. If the nation then reduces the real exchange rate to improve its external balance, this will unleash further economic forces globally to create another race for each nation to make its industries more competitive to restore external balance.

Clearly, the failure of the Swan diagram analysis to recognize any income effects on the external balance implies the Swan diagram is not a useful tool for policy decisions over any length of calendar time.

This simple example suggests that in the absence of some coordinated cooperative efforts by all the trading partners, it may be impossible for any nation to maintain internal balance that permits growth at full employment and simultaneously maintain an external balance. In other words, since the external balance depends in part upon economic income effect factors in a nation's trading partners, there is no domestic government policy choices which can guarantee the

simultaneous achievement of internal and external balance over a period of calendar time no matter what economic income effects are occurring in the trading partners.

Can Both Internal and External Balance Ever Be Achieved Simultaneously?

Income effects in trading partners can have an important effect on the level of effective demand in any nation. For example, suppose a country finds itself with a depressed economy with significant unemployment and a negative value of net exports (i.e., a deficit in its current account balance) such as has existed in the USA since the financial crisis of 2008. Former U.S. Secretary of the Treasury Geithner and current Secretary of the Treasury Lew in the Obama administration have continually demanded that the Chinese permit their exchange rate to increase (thereby reducing the real dollar exchange rate) in order to encourage more US exports to China and less Chinese imports for the USA. President Obama, probably under the influence of his Treasury Secretaries' belief in reducing the dollar exchange rate, has, in his State of the Nation speeches; often spoken of the need for increasing US exports to solve the unemployment problem in the USA.

In the China vs. USA situation, however, China has recognized the threat of an increasing Chinese exchange rate to their export-led growth policy and thus has been accused by many in Congress of being a currency manipulator to prevent large changes in the exchange rate impacting on their "miracle" economic growth rate. During August 2015, China's actually announced a policy for a 4% devaluation of its exchange rate. This has added fuel to the cries against China's use of export led growth policies and has led to demand that China increase domestic demand (via fiscal policy?) instead of by exercising currency manipulation.

During the Great Depression of the 1930s, any nation's policy to devalue its exchange rate

to increase its domestic employment was called “exporting your unemployment.” The Swan diagram suffers from the inadequacy of its theoretical foundations, which allows it to avoid recognition of the effect of this senseless competition by implicitly assuming the trading partners do not suffer sufficient losses in the aggregate demand for their products to induce a large income effect and thus retaliate against the initial nation pushing its exchange rate lower.

The blindness of the Swan diagram to both induced income effects and policy reactions of trading partners when a nation real exchange rate is altered and thereby impacts foreigner’s export business and foreigner’s demand for imports instead of their own nation’s production, makes the Swan diagram practically useless for real world policy decision making. If each nation in an open global economy attempts to utilize the Swan analysis, which encourages use of changes in the real exchange rate as a major policy variable for the current account balance, the effect can actually be damaging to the global economy.

What the Harrod-Thirlwall emphasis on the marginal propensity to import condition does is to indicate that the Swan diagram is not a useful tool for determining internal and external balance in an open global economy—unless the nation following the Swan analysis is so small as to have little impact on global trade per se and therefore no significant impact on other nations’ income via their total production for exports.

Is There a Solution to the Problem of the Interaction of Foreign Governments With Domestic Policy Changes?

Keynes [1936, p. 382-3] argued that

“if nations can learn to provide themselves with full employment by their domestic [fiscal] policy, there need be no important economic forces to set the interests of one country against its neighbors. There would still be room for the international division of labour and

for international lending in appropriate conditions. But there would no longer be a pressing motive why one country need force its wares on another or refuse the offering of its neighbor...International trade would cease to be what it is, namely a desperate expedient to maintain employment at home by forcing sales on foreign markets and restricting purchases, which, if successful, will merely shift the problem of unemployment to the neighbor which is worsted in the struggle, but a willing and unimpeded exchange of goods and services in conditions of mutual advantage.”

Unfortunately, the Swan diagram by encouraging the use of an exchange rate devaluation to achieve external balance merely perpetuates this need and desire for a “desperate expedient” to force sales of domestic products on foreign markets and restrict purchases of imports.

Keynes, however, suggested that if conditions can be created that permit each nation to develop a fiscal policy that assures domestic full employment without having to worry about inducing international problems by pursuing an additional policy for maintaining an external balance, then it might be possible to achieve and maintain a globally fully employed economic system that benefits all nations simultaneously.

It was not until the meetings at Bretton Woods, however, that Keynes explicitly specified a global economic policy proposal that would insulate each nation from the economic policies and positions occurring in their neighbors that might unleash contractionist economic forces against its neighbors. Keynes’ view was to create an international clearing union system where each nation could pursue policies to assure internal balance at full employment without the nation worrying about external balance problems with their neighbors. This system was labeled the “Keynes Plan.”

Keynes [1941, p. 27] noted that

“It is characteristic of a freely convertible international standard that it throws the main burden of adjustment on the country which is the *debtor* position on the international balance of payments.... that is, on the country which is (in this context) by hypothesis the *weaker* and above all the *smaller* in comparison with the other side of the scales which (for this purpose) is the rest of the world.”

Moreover, Keynes [1941, p.28] argued that placing the burden of correcting international payments imbalances on the debtor nation to reduce its exchange rate effectively reduce the debtor nation’s wages and prices relative to the creditor nation. This forces on the deficit nation “adjustments in the direction most disruptive of social order and to throw the burden of adjustment on the countries least able to support it making the poor poorer” [Keynes 1941, p.29].

Keynes concluded that an essential improvement in designing an international payments system requires transferring the *onus* of adjustment from the debtor to the creditor position, and thereby aiming “at the substitution of an expansionist, in place of a contractionist, pressure on world trade” [Keynes, 1941, p. 176.]

The Swan diagram analysis is merely another proposal to throw the main burden of adjustment for reaching a balance in international payments on any debtor nation currently running trade deficits. Accordingly, Temin and Vines are not correct when they claim that the Swan Diagram analysis can be used to translate the complexity of Keynes’s *General Theory* into a form that makes it readily understandable to people.

Keynes insisted that to achieve a golden era of global economic development requires combining a fixed, but adjustable, exchange rate system with a mechanism for requiring the surplus trading nation(s) to initiate most of the effort necessary to adjust an international payments imbalance, without removing all discipline from the deficit trading partner(s).

For approximately two decades following the Bretton Woods agreement, the United States, then the world's major creditor nation, unilaterally accepted responsibility for curing deficits in the international payments balances of debtor nations – originally via the Marshall Plan and then later via other forms of foreign and military aid. As long as the United States ran potentially significant current account surpluses that these foreign aid program fund outflows offset, the result was a golden age of economic growth for nations of the world.

By 1958, however, although the United States still had an annual goods and services export surplus of over \$5 billion, the U.S. government foreign and military aid exceeded \$6 billion and net private capital outflows were \$1.6 billion. The potential for United States international trade balance payment credit surplus inflows was coming to an end. A rebuilt Europe and Japan became important producers of exports and the US exports markets began to decline significantly.

Foreign nations began to experience international payment surpluses. These international payments surplus nations did not spend these surpluses on purchasing more imports from deficit nations. Instead they began to build up large amounts of liquid foreign exchange reserves, initially in the form of gold reserves purchased from the United States until in 1971 President Nixon closed the gold window.

The Keynes principle that surplus international earnings by creditor nations should be used to buy foreign goods had ended and the seeds for future global economic slowdowns were being sown.

It was the failure of the system adopted at Bretton Woods to perpetuate this rule that the creditor nation *must* readily accept the onus of responsibility of solving imbalances in international payments that led, after a quarter century of global prosperity following World War

II, to the end of the global golden era of economic development for both developed and less developed nations.

The Bretton Woods system had promoted the IMF and the World Bank as substitute international institutions that were expected to play a role to assure that nations were not preoccupied with possible international payment problems as they adopted fiscal policies to achieve domestic full employment—a role with the same objective as the clearing union institution of the Keynes Plan. The results were not very successful as the IMF provided, at most, some short term funds *for debtor nations* to have a short period of time to end their trade balance deficit on the international payments system, while the World Bank was expected to provide international funding for less developed *debtor* nations who could then invest in projects to promote growth and thereby earn sufficient funds to service their World Bank loans without exporting their unemployment and thereby impinging on the earning aspects of labor in developed nations. It can be seen that both the IMF and World Bank institutional arrangements did not put the onus of solving external payment imbalances directly on the creditor nations. They only try to ease the debt servicing problem for the debtors.

The following is a proposal for an international payments system that builds on the principle underlying Keynes's Bretton Woods Plan that was to encourage creditor nations to accept the onus of curing international payment imbalance. This principle proved to be the successful basis for producing the expansionist pressure on world trade and development during the early decades after the Second World War.

In an interdependent global economy, some degree of economic cooperation among trading partners is necessary. The proposal given below does not require the establishment of a Supranational Central Bank to create a single monetary system across national boundaries—such

as has been developed in the Eurozone - even if this is believed desirable on other grounds. For even within a single nation there can be regional payments imbalances that cannot be readily cured solely by the actions of a central bank. To cure these regional imbalances within a nation's boundaries requires a supra regional fiscal authority which can spend additional funds in the deficit region while, if necessary, increasing taxes in the surplus region to gain the funds to spend in the deficit region.

Politically, to cure the international payment imbalances, such a supra-national fiscal authority is not possible. Even within a single monetary system that crosses national borders such as the Eurozone, no supra national fiscal authority is politically possible. Accordingly, some other institution arrangement must be invented that establishes "rules of the road" for international spending behavior that encourages more spending by nations experiencing a favorable international payments balance to buy more exports from the foreign nations with a deficit in its international balance of payments. This will permit the deficit nations to work their way out of a debt position.

Keynes's original "bancor" plan for the post- Second World War environment was developed around the idea of a single Supranational Bank. At this stage in the evolution of world politics, a global Supranational Central Bank is not feasible or desirable. Our suggestion is a more modest one aimed at obtaining an international agreement that does not require surrendering national control of domestic banking systems and domestic monetary and fiscal policies. More than a half century ago, Keynes provided a clear outline of what is needed when he wrote: "We need an instrument of international currency having general acceptability between nations... We need an orderly and agreed upon method of determining the relative exchange values of national currency units . . . We need a quantum of international currency . . . [which] is governed

by the actual current [liquidity] requirements of world commerce, and is capable of deliberate expansion. . . We need a method by which the surplus credit balances arising from international trade, which the recipient does not wish to employ can be set to work . . . without detriment to the liquidity of these balances” [Keynes, 1941, p. 168]

What is required is a *closed*, double-entry bookkeeping clearing institution to keep the payments score among the various trading nations plus some mutually agreed upon rules to create and reflux liquidity while maintaining the international money contractual settlement (purchasing) power of the international reserve currency. The six provisions of the clearing system suggested in this section meet the criteria laid down by Keynes. The rules of this Post Keynesian proposed system are designed (1) to prevent a lack of global effective demand due to any nation(s) either holding excessive idle reserves or draining reserves from the system, (2) to provide an automatic mechanism for placing a major burden of international payments adjustments on the surplus nations, (3) to provide each nation with the ability to monitor and, if desired, to control movements of capital funds across its borders, and finally (4) to expand the quantity of the liquid asset of ultimate international redemption as global capacity warrants while preventing speculative flow of funds across national borders creating disruptive effects on economic use of resources and global full employment. For as Keynes [1941, p. 31] noted “Loose funds may sweep around the world disorganizing all steady business. Nothing is more certain than that the movement of capital funds must be regulated—which in itself will involve far-reaching departures from *laissez-faire* arrangements.”

Six elements of such a clearing system that would achieve the aforementioned objectives listed above are:

1. The unit of account and ultimate reserve asset for international liquidity is the International

Money Clearing Unit (IMCU). All IMCUs are held *only* by central banks on the balance sheet of the clearing union... Hence the public cannot hold or speculate directly on the market price of the IMCU.

2. Each nation's or currency union's central bank is committed to guarantee one-way convertibility from IMCU deposits at the clearing union to its domestic money. Each central bank will set its own rules regarding making available foreign monies (through IMCU clearing transactions) to its own bankers and private sector residents. Since central banks agree to sell their own liabilities (one-way convertibility) against the IMCU only to other central bankers and the International Clearing Union while they simultaneously hold only IMCUs as liquid reserve assets for international financial transactions, there can be no draining of reserves from the clearing union system. Ultimately, all major private international transactions clear between central banks' accounts on the balance sheet of the international clearing union institution.

3. The exchange rate between the domestic currency and the IMCU is set *initially* by each nation, just as it would be if one instituted an international gold standard. Since enterprises that are already engaged in trade have international money contractual commitments that would span the change-over interval, then, as a practical matter, one would expect that the existing exchange rate structure (with perhaps minor modifications) would provide the basis for initial rate setting.

4. International contracts between private individuals will continue to be denominated into whatever domestic currency is permitted by local laws and agreed upon by the contracting parties. Contracts to be settled in terms of a foreign currency will therefore require some announced commitment from the nation's central bank (through private sector bankers) of the availability of foreign funds to meet such private contractual obligations.

5. An overdraft system to make available short-term unused creditor balances at the clearing

house to finance the productive international transactions of others who need short- term credit. The terms will be determined by the *pro bono publico* clearing institution managers.

6. A trigger mechanism to encourage a creditor nation to spend what is deemed (in advance) by agreement of the international community to be *excessive credit balances accumulated by running current account surpluses*. These excessive credits can be spent in three ways: (1) on the products of any other member of the clearing union, (2) on new direct foreign investment projects, and/or (3) to provide unilateral transfers (foreign aid) to deficit members. Spending on imports forces the surplus nation to make the adjustment directly through the balance on goods and services. Spending by way of unilateral transfers permits adjustment directly by the current account balance, while that on direct foreign investment provides adjustment by the capital accounts (without setting up a contractual debt that will *require* reverse current account flows in the future).

Provision No. 6 provides the surplus country with considerable discretion in deciding how to accept the onus of adjustment in the way it believes is in its residents' best interests. It does not permit the surplus nation to shift the burden to the deficit nation(s) through contractual requirements for debt service charges independent of what the deficit nation can afford. The important thing is to make sure that continual oversaving by surplus nations cannot unleash depressionary forces and/or a building up of international debts so encumbering as to impoverish the global economy of the twenty- first century.

In the unlikely event that the surplus nation does not spend or give away these excessive credits within a specified time, then the clearing agency would confiscate (and redistribute to debtor members) the portion of credits deemed excessive. This last resort confiscatory action by the managers of the clearing agency would make a payment adjustment through unilateral transfer

payments in the current accounts.

Under either a fixed or a flexible rate system, nations may experience persistent trade deficits merely because trading partners are not living up to their means - that is because other nations are continually hoarding (saving) a portion of their foreign export earnings (plus net unilateral transfers). By so doing, these oversavers are creating a lack of global effective demand. Under provision No. 6, deficit countries would no longer have to deflate their real economy (or a devaluation of the real exchange rate) merely to adjust payment imbalances because others are oversaving. Instead, the system would seek to remedy the payment deficit by increasing opportunities for deficit nations to sell their products and services abroad and thereby work their way out of debt.

Thus, this 21 Century version of the Bretton Woods “Keynes Plan” resolves the problem of how any nation can pursue internal balance without having to worry about trading partners pursuing external balancing policies that can have negative impacts on this nation’s pursuit of full employment.

The Swan diagram promises policy makers they hold all the policy tools necessary to achieve full employment without an imbalance in international payments and without worrying about trading partners policies merely by assuming trading partners policies would not impact on the domestic economy – an assumption that merely presumes away real world complications.

What About International Capital Flows?

Up until now, we have adopted the Swan view of ignoring exogenous international capital funds flows from impacting the balance of international payments. Now we are going to recognize that exogenous capital outflows can be devastating—like a run on the banking system when depositors run to holding cash and therefore threatening the bankruptcy of the banking

system. Since the Great Depression nations have become aware of how deleterious massive flows out of the banking system can be towards the domestic economy and nations have developed policies, e.g., bank deposit insurance in the USA that induces most people to keep their funds in the banking system.

Similarly a flow of “hot money” out of a nation into another can create a significant economic problem for both the nation experiencing the outflow (which will threaten the viability of the domestic banking system) and the nation experiencing the inflow of hot money which, by raising the exchange rate, may adversely affect the demand for products produced domestically and for imports – as well as possibly creating a financial asset bubble.

Accordingly, as the Keynes Plan recognized, it is necessary for each nation to have a standby policy of international capital flow controls to assure international financial flows do not disturb normal business production decisions. As Keynes noted:

“There is no country which can, in the future, safely allow the flight of funds for political reasons or to evade domestic taxation or in anticipation of the owner turning refugee. Equally, there is no country that can safely receive fugitive funds which cannot be safely be used for fixed investments and might turn it into a deficiency country against its will and contrary to the real facts” [Keynes, 1941, p.87].

For example, the United States currently is experiencing corporate “inversions”, i.e., corporations evading U.S. domestic taxes by transferring of corporate headquarters and profits of their organization to other nations that impose lower corporate profit taxes. The Obama administration has recognized this problem but has still not, and really cannot, eliminate these inversion outflows without establishing some form of capital controls.

Why Temin and Vines View of Keynes's General Theory Is Not Compatible With Keynes's Writings.

In their 2014 paper for the Institute for New Economic Thinking entitled "Why Keynes Is Important Today", Temin and Vines present what they believe is the essence of Keynes's *General Theory*. They write:

"Modern macroeconomics flourished in its pursuit of the secrets of long run economic growth, but neglected short-run economic problems. *In the long run, prices are flexible*, and the growth of the economy is determined by the growth in the ability to supply goods and services. But in the short run prices are not flexible. Growth can be held back because prices are too high and as a result, demand is too low. *Keynes made his name by analyzing short-run problems caused by the stickiness or even rigidity of some important prices*. But these Keynesian ideas were abandoned by modern macroeconomics." [Temin and Vines, 2014, p. 1, emphasis added].

Temin and Vines claim that Keynes's analysis required short-run price rigidity, such as a sticky, money wage rate and administered product prices, is also exactly what classical theory relied upon to explain the cause of unemployment. This rigidity presumption is also the basis of Samuelson's neoclassical synthesis interpretation of Keynes's *General Theory*, but this presumption of rigidity is in direct conflict with Keynes's own words about what he believed was the basis of his *General Theory of Employment, Interest, and Money*.

As Keynes put it:

"For the classical theory has been so accustomed to rest the supposedly self-adjusting character of the economic system on the assumed fluidity of money wages; and, when there is rigidity, to lay on this rigidity the blame of maladjustment... My difference from this theory is primarily a difference of analysis" [Keynes, 1936, p. 257].

To understand the difference between Keynes' analysis of the cause of unemployment and the rigidity presumption of Samuelson and Temin and Vines as the cause of unemployment requires an explanation of how Keynes' macroeconomic analysis was perverted by Samuelson's neoclassical synthesis interpretation of Keynes.³ After that we will be able to provide the explanation of how Keynes' liquidity theory "is primarily a difference of analysis" of the cause of unemployment from any theory that presumes wage and price rigidity or stickiness is the basic cause of unemployment in the short run – or even in the longer run. Once the reader is made aware of what Keynes called "the essential properties" of all liquid assets, then the reader will better understand the principles behind my IMCU institutional arrangement of the Keynes Plan presented at Bretton Woods.

Samuelson's Abortion of Keynes's General Theory

In 1941, Samuelson's Ph.D. dissertation won the Wells prize for the best dissertation in economics at Harvard. This dissertation was polished and finally published as *Foundations of Economic Analysis* (1947). Neoclassical synthesis Keynesianism and New Keynesianism is based on what, in this book, Samuelson asserted, is the necessary Walrasian classical microfoundations of all economic theory. If the microfoundations of any macroeconomic analysis is not Walrasian, then, according to Samuelson, this non-Walrasian micro based macroeconomics is neither a valid theory of economics nor what Keynes meant in his *General Theory*.

Nevertheless, Keynes [1936, pp. 176-7] stated that Walras "is strictly in the classical tradition" – a tradition that Keynes's *General Theory* was attempting to replace. Moreover, as we have already noted on p. 257 of the *General Theory*, Keynes explicitly denied that his theory of unemployment required the classical theory presumption of rigid money wages.

After reading Keynes' *General Theory* in 1936, Samuelson has stated that he found its analysis "unpalatable" and not comprehensible [Colander and Landreth, 1996, p. 159]. Samuelson indicated that "The way I finally convinced myself was to just stop worrying about it [about understanding Keynes's analysis]. I asked myself: why do I refuse a paradigm that enables me to understand the Roosevelt upturn from 1933 till 1937? ... *I was content to assume that there was enough rigidity in relative prices and wages to make the Keynesian alternative to Walras operative*" [Colander and Landreth, 1996, pp. 159-160, emphasis added].

In other words, Samuelson assumed that the Walrasian general equilibrium analysis was a general theory of employment and Keynes's analysis was a special case where an additional restrictive assumption of rigid money wages and/or product prices was added to a Walrasian microfoundation to develop an analysis where the gross substitution effect (which requires flexible prices and wages) cannot work to assure full employment in the short run.

Samuelson [Colander and Landreth, 1996, p.163] explicitly stated that in his view Keynes's analysis is merely a "very slowly adjusting disequilibrium ... [where] the full Walrasian equilibrium was not realized" in the short run because prices and money wages do not adjust rapidly enough to an exogenous shock. Nevertheless, the economic system would, if left alone, achieve full employment in the long run as all prices and wages are variable.

Obviously, Temin and Vines [2014, p. 1] have the same Walrasian slowly adjusting system in mind when they note that in short run prices are rigid but "In the long run, prices are flexible and the growth of the economy is determined by the growth in the ability to supply goods and services" and not by a shortage of aggregate effective demand. By using the Swan diagram to encourage governments to adopt a policy of changing the real exchange rate to end international payments imbalances, Temin and Vines are apparently attempting to speed up the Walrasian slow

adjustment process of flexible prices, at least for international transactions.

It is worth noting that following Samuelson's Walrasian interpretation of Keynes, all mainstream "Keynesian" economists after the Second World War treated Keynes's theory as a "special case" of the classical [Walrasian] general theory, applicable only to conditions where money wages and prices are "sticky" and therefore the economic system is a Walrasian slowly adjusting process.

In their Institute for New Economic Thinking paper to explain why Keynes is so important today, Temin and Vines unquestionably accept this old Samuelson thinking of the economy as a Walrasian slow adjusting system despite Chapter 19 of the *General Theory* entitled "Changes in Money Wages" where Keynes explicitly denies the validity of this rigidity assertion as a basis for his theory of involuntary unemployment.

Samuelson never tried to comprehend Keynes's Marshallian micro-analytical foundation and framework for his *General Theory*. In 1986 Samuelson was still claiming that "we [Keynesians] always assumed that the Keynesian underemployment equilibrium floated on a substructure of administered prices and imperfect competition" [Colander and Landreth, 1996, p.160]. When pushed by Colander and Landreth as to whether this requirement of rigidity was ever formalized in his work, Samuelson's response was "There was no need to" [Colander and Landreth, 1996, p. 161].

Yet specifically in Chapter 19 of the *General Theory* and even more directly in Keynes's published response to Dunlop [1938], Keynes [1939] had already responded in the negative to this question of whether his analysis of less than full employment equilibrium required imperfect competition, administered prices, and/or rigid wages. Dunlop had argued that the purely competitive model was not empirically justified; therefore it was monopolistic price and wage

fixities that must be the realistic basis of Keynes's unemployment equilibrium. Keynes reply to Dunlop was simply: "I complain a little that I in particular should be criticised for conceding a little to the other view" [Keynes, 1973, p. 411].

In Chapters 17-19 of his *General Theory* Keynes explicitly demonstrated that even if perfectly flexible money wages and prices existed ("conceding a little to the other side"), there was no automatic market mechanism that could restore the full employment level of effective demand in his theory. In other words, Keynes's general theory – using Marshallian microfoundations - could show that, as a matter of logic, less than full employment equilibrium could exist in a purely competitive economy with freely flexible wages and prices.

Obviously Samuelson, who became the premier American "Keynesian" of his time, had either not read, or not comprehended (1) Keynes' response to Dunlop or even (2) Chapter 19 the *General Theory*. Nor apparently have Temin and Vines!

Keynes [1936, p. 259] indicated that to assume that rigidity was *the* sole cause of the existence of an unemployment equilibrium implied accepting the argument that the Marshallian micro-demand functions "can only be constructed on some fixed assumption as to the nature of the demand and supply schedules of other industries and fixity as to the amount of aggregate effective demand. It is invalid, therefore to transfer the argument to industry as a whole unless we also transfer the argument that the aggregate effective demand is fixed. Yet this assumption reduces the argument to an *ignoratio elenchi*."

An *ignoratio elenchi* is a fallacy in logic of offering a proof irrelevant to the proposition in question. Unfortunately Samuelson invoked the same classical *ignoratio elenchi* when he argued that Keynes's general theory was simply a slowly adjusting Walrasian general equilibrium system where, if there is an exogenous shock to effective demand, rigid wages and prices created a

temporary disequilibrium that prevented full employment equilibrium from being restored in the short-run.

Even more unfortunately, Temin and Vines have followed Samuelson down this same false path – even though Keynes explained in the *General Theory* why blaming rigidities for the cause of a shortage of effective demand is a mistake in logic!

As Keynes went on to explain, “whilst no one would wish to deny the proposition that a reduction in money wages *accompanied by the same aggregate effective demand as before* will be associated with an increase in employment, the precise question at issue is whether the reduction in money wages will or will not be accompanied by the same aggregate effective demand as before measured in terms of money, or, at any rate, by an aggregate effective demand which is not reduced in full proportion to the reduction in money-wages” [Keynes, 1936, pp.259-60].

Keynes then spent the rest of Chapter 19 analyzing the question that if the economy was not initially at full employment, how would any reduction in the money wage rate affect both the aggregate supply function and the aggregate demand function. A reduction in money wage rates reduced money costs of production at every level of employment and therefore would shift downwards the aggregate supply curve function “in money terms.” The money wage reduction implies a reduction in aggregate money wage income at every possible level of employment. This reduction in wage earners money income would reduce their aggregate money spending on consumption at each level of employment. The result is to also shift downwards the aggregate demand function “in money terms.”

Does the downward shift in both the aggregate demand curve and the aggregate supply curve in money terms result in their intersection at the same initial level of employment or will a new point of intersection of these curves after their shifts be at full employment, or at least a

higher level of employment? Keynes' Marshallian microfoundation answer was there was no reason to believe that the two downward shifting curves intersection would produce a higher equilibrium level of employment.

This question of where the point of effective demand would be if all prices and wages were flexible, by assumption, is not relevant to a Walrasian system or Samuelson's neoclassical synthesis Keynesianism, which assumes a slowly adjusting Walrasian system. A Walrasian system is built on the assumption that with flexible wages and prices there will always be a sufficient market demand to purchase all that is produced by a fully employed economy at profitable prices for the entrepreneurs. There can never be a lack of effective demand if all wages and prices are flexible.

At the same time that Samuelson was developing his neoclassical synthesis Keynesianism, he was working on cleaning up his masterful *Foundations of Economic Analysis* [1947] in which Samuelson "demonstrates" that the Walrasian system is *the* foundation for all economic theory. In this 1947 book, Samuelson asserted certain specific classical axioms are necessary as the foundation of all economic analysis. For example Samuelson noted that "in a purely competitive world it would be foolish to hold money as a store of value as long as other assets had a positive yield" (Samuelson, 1947, pp. 122-4). This statement implies that (1) producible capital goods (plant and equipment) that provide a positive yield of output are preferable to money as a substitute form in which to hold one's savings and therefore (2) money is neutral in the sense that changes in the quantity of money per se cannot affect the level of employment and output.

Keynes [1935, pp. 408-9], however, rejected the neutral money axiom when he wrote: "the theory which I desiderate would deal...with an economy in which money plays a part of its own and affects motives and decisions, and is, in short, one of the operative factors in the

situation, so that the course of events cannot be predicted either in the long period or in the short, without a knowledge of the behavior of money between the first state and the last. And it is this which we mean when we speak of a monetary economy....Booms and depressions are peculiar to an economy in which ...*money is not neutral.*”

Furthermore, in Chapter 17 of the *General Theory* Keynes [1937, p. 231] explicitly stated that in his liquidity theory real producible capital goods are not gross substitutes for money or any liquid asset as a form for holding one’s savings. Accordingly, Keynes explicitly rejected the ubiquitous use of the gross substitution axiom as a foundation of his macroeconomic theory.

Furthermore, Samuelson argued that the “ergodic hypothesis [axiom]” is a necessary foundation if economics is to be a hard science [Samuelson, 1969, p. 184]. But as we have also explained in detail elsewhere [Davidson, 1982-83; 2002, 2007, 2009, 2011, 2015], Keynes’s concept of an uncertain future requires the rejection of this ergodic axiom.

Since a general theory is one that has fewer restrictive axioms than another theory, Keynes’s theory, which rejects three restrictive classical axioms, namely, the neutral money axiom, the ubiquity of the gross substitution axiom, and the ergodic axiom, must be more general theory than the foundations of macroeconomic theory developed from Walrasian theory by Samuelson and accepted by Temin and Vines. These three classical restrictive axioms are “the postulates of the classical theory ...applicable to a special case only and not to the general case... Moreover the characteristics of the special case assumed by classical [Walrasian] theory happen not to be those of the economic society in which we actually live, with the result its teaching is misleading and disastrous if we attempt to apply it to the fact of experience” [Keynes, 1936, p. 3].

Keynes’s Theory Is Primarily a Difference of Analysis

As Keynes's developed his theory of liquidity preference he recognized that his

explanation of the existence of involuntary unemployment required specifying "The Essential Properties of Interest and Money" [1936, Ch. 17] that differentiated his analytical results from classical theory. These "essential properties" assured that money and all other liquid assets are never neutral. Keynes [1936, pp. 230-231] specified these "essential properties" as:

[1] the elasticity of production of all liquid assets including money is zero or negligible, and

[2] the elasticity of substitution between liquid assets (including money) and reproducible goods is zero or negligible.

"The attribute of 'liquidity' is by no means independent of the presence of these two characteristics" [Keynes, 1936, p. 241, n.1]. All liquid assets have these two essential elasticity characteristics.

A zero elasticity of production means that money does not grow on trees and consequently workers cannot be hired to harvest money trees when the demand for money increases. Or as Keynes wrote: "money...cannot be readily reproduced; labour cannot be turned on at will by entrepreneurs to produce money in increasing quantities as its price rises" [Keynes, 1936, p. 230].

Accordingly, when people save out of current income instead of buying producible goods, the demand for producibles is lowered while the resulting savings increases the demand for money (and/or other liquid assets with the same essential elasticity properties). If the market demand for producibles is reduced by savings, then employers will hire fewer workers and there will be a decline in the production of goods and services. Since the production elasticity of money and liquid assets is zero, private sector entrepreneurs cannot hire the unemployed labor to produce more money (or other liquid assets) to meet this increase in demand by savers for liquid

nonreproducible (by the private sector) assets. (In Keynes's theory, liquidity is a concept where if one has sufficient liquidity one has the ability to meet all money contractual obligations as they come due.)

In classical Walrasian theory, on the other hand, money is a reproducible commodity. In many neoclassical textbook models of a Walrasian system, peanuts or some other easily reproducible product of industry is the money commodity or numeraire. Peanuts may not grow on trees, but they do grow on the roots of bushes. The supply of peanuts can easily be augmented by the hiring of additional workers by private sector entrepreneurs when the demand for peanut money (or any producible asset) increases.

The zero elasticity of substitution assures that portion of income that is not spent on by the products of industry for consumption purposes, i.e., savings, will, in Hahn's [1977, p. 31] terminology, find "resting places" in the demand for nonproducibles, i.e., liquid assets. Producing real capital goods are not a gross substitute for liquid assets as places where savers will store their savings. Some forty years after Keynes, Hahn rediscovered Keynes's point that a stable involuntary unemployment equilibrium could exist *even in a purely competitive system with flexible wages and prices* whenever there are "resting places for savings in other than reproducible assets" [Hahn, 1977, p. 31].

Hahn rigorously demonstrated what may have been logically intuitive to Keynes. Hahn [1977, p. 37] showed that the view that with "flexible money wages there would be no unemployment has no convincing argument to recommend it ... Even in a pure tatonnement in traditional models convergence to [a general] equilibrium cannot be generally proved" if savings were held in the form of nonproducibles. Hahn [1977, p. 39] argued that "any non-reproducible asset allows for a choice between employment inducing and non-employment inducing demand."

Accordingly, the existence of a demand for money and any other liquid nonreproducible assets (when the products of the capital goods producing industries are not a gross substitutes) as a store of “savings” creates the potential for involuntary unemployment. Any saved income is not, in the short or long run, necessarily spent on the products of industry. Households that save (i.e., do not spend a portion of their income on the products of industry and store that portion of their income that they do not consume in liquid assets) are choosing, in Hahn’s words, “a non-employment inducing demand” for their savings.

If the gross substitution axiom is universally applicable, however, any new savings that would increase the demand for nonproducibles and therefore would increase the price of nonproducibles (whose production supply curve is, by definition, perfectly inelastic). The resulting relative price rise in nonproducibles vis-a-vis the price of producibles would, if gross substitution was universally applicable, induce savers to increase their demand for reproducible durables as a substitute for nonproducibles in their savings holdings. Consequently nonproducibles could not be ultimate “resting places” for savings because when the price of nonreproducible liquid assets rose savers would substitute producibles and therefore their savings would spill over into a demand for producible goods.

Samuelson’s assumption of a Walrasian system where all demand curves are based on a ubiquitous gross substitution axiom implies that everything is a substitute for everything else. In Samuelson’s foundation for economic analysis, therefore, producibles must be good (or better) gross substitutes for any existing nonreproducible liquid assets (including money) when the latter are used as stores of savings. Accordingly, Samuelson’s *Foundations of Economic Analysis* explicitly denies the logical possibility of involuntary unemployment as long as all prices are perfectly flexible. Apparently, Temin and Vines agree with this. In their view, in the long run, all

“prices are flexible” [Temin and Vines, 2014, p.1] and total output is only limited by the growth in the ability of the economy to produce more goods and services.

Samuelson’s brand of Keynesianism is merely a form of the classical special case analysis that is “misleading and disastrous” [Keynes, 1936, p. 3] if applied to the real world. In the absence of a ubiquitously applicable axiom of gross substitution, however, income effects (e.g., the Keynesian multiplier) can predominate and can swamp any hypothetical classical gross substitution effects. An increase in demand for "savings" over time that raises the relative price of nonproducibles will not necessarily spill over into a demand for producible goods.

Accordingly, if at a full employment level of income decision makers want to save a portion of their income in nonproducibles, then they will have made a choice for “non-employment inducing demand.” To offset this non-employment induced demand and maintain full employment, other decision makers must spend more than their full employment income in the marketplace on producibles. To spend in excess of their full employment income, these decision makers must either spend a portion of their previous savings on producibles or borrow new money from the banking system to spend on producible goods and services.

In an international context, if any nation runs a persistent surplus in its balance of payments, then it is saving its excess of income earned from exports over its payment for imports, to obtain liquid foreign reserves – an international non-inducing employment demand. Thus, Keynes put forth as a principle that if any nation persistently runs international payments surpluses this creates a significant shortage of international effective demand for its trading partners. Consequently to remove the international sector from creating employment problems for any nation, Keynes required any persistent surplus creditor nation to spend down its saved accumulated liquid international reserves. Keynes [1941, p.176] argued that the onus should be on

the creditor nation to solve this accumulating non-inducing employment demands and therefore to encourage the creditor nation to provide international expansionary economic forces. After all, this onus is not costly to the creditor nation as it has the liquidity wherewithal to engage in such an activity.

Thus Keynes saw the necessity of creating an international institution where all trading nations agree to a “rule of the road” that requires persistent creditor nations to spend down their excessive foreign reserves. This would solve any international payment imbalance problem by placing an expansionist pressure on world trade.

If, instead of relying on an international institution’s rule of the road and creating an expansionist pressure on global trade, nations were to follow the Swan Diagram approach that Temin and Vines advocate, and rely on the debtor nation to devalue its exchange rate to improve its balance of payments position, then the effect would not only reduce the standard of living for the residents of the debtor nation but it would put “in place a contractionist pressure on world trade” [Keynes, 1941, p. 176]

Finally, Keynes argued that only in a money-using entrepreneur economy where the future is uncertain (and therefore could not be reliably predicted) would money (and all other liquid assets) always be nonneutral as they are used as a store of savings. In essence Keynes viewed the economic system as moving through calendar time from an irrevocable past to an uncertain, not statistically predictable, future. This required Keynes to reject the ergodic axiom.

Samuelson’s slowly adjusting Walrasian system view of Keynes’ theory resulted in aborting Keynes’s revolutionary analysis from altering the foundation of mainstream macroeconomics. Consequently, what passes as the conventional macroeconomic wisdom of mainstream economists at the beginning of the 21st century is nothing more than a high-tech and

more mathematical version of 19th century classical theory.

Current economic policies, such as “austerity” and fears of government deficits, adopted in the United States and the Eurozone, demonstrate the real world economic damage of Samuelson’s proclamation that his “reconstructed” Keynesianism provided the correct analytical foundations for understanding the economic world in which we live. Instead, had the Post Keynesian explanation of Keynes’s *General Theory* been taken up by mainstream economists and politicians, the world we live in would be a more prosperous and civilized economic society.

Response to Temin’s and Vines’ Comments on Earlier Versions of This Paper

An earlier draft of this paper explaining the errors in the Temin and Vines claim that the Swan diagram provides an understanding of Keynes’ *General Theory* for an open economy was sent to Temin and Vines. They (10/22/2015, p. 1) commented that the material I presented in that draft of mine was “either irrelevant or incorrect” as a criticism of the Temin-Vines claim that the Swan Diagram provides an understanding of Keynes’ *General Theory* for an open economy.

This section of my paper responds to specific points they make in their first (10/22/2015) comments in support of their viewpoint.

1. Despite their argument that the Swan diagram is equivalent to Hicks’ IS/LM in allowing people to understand the complexity of Keynes’s *General Theory*, Temin and Vines (2015, p. 2) argues that whether the IS/LM “is a good way of representing Keynes’s actual ideas...or whether it actually describes the economy we live in, is not an important question... [Temin and Vines’ sole] concerns are about the achievement of external and internal balance in an open economy.”

How can Temin and Vines encourage policy makers to use an analysis that does not “actually

describe the economy we live in”? Temin and Vines explicitly state that the Swan diagram was as good as the Hicks’ IS/LM analysis for understanding Keynes theory and its applicability to the world in which we live. I demonstrated to Hicks (which he acknowledged) that the IS/LM diagram neither represented Keynes’s analysis nor the real world in which we live. Accordingly I hoped to convince Temin and Vines as well as the objective reader that the Swan diagram is also neither Keynes’ theory nor is it applicable to our global economic system.

In their first comments on my earlier draft, Temin and Vines essentially concede that they made an error with their claim that the Swan diagram provides any clues to Keynes’s analysis. Their (2015, p.2) concession is hidden when they write that my discussion of why the Swan diagram is not a “good way of representing Keynes’s actual views...or describes the economy we live in *is not an important question*” [emphasis added]. Rather than to either directly prove me wrong or to directly admit that they are in error in their claim that the Swan diagram is a tool that explains Keynes’ theory, their response was that whether the Swan diagram explains Keynes “is not an important question.” This comment attempts to divert attention from the importance they had placed on the Swan diagram in their book as a useful tool for understanding Keynes’ theory for an open global economy.

Temin and Vines apparently only wanted to study how to get external and internal balance simultaneous and the Swan diagram does, at least, place both questions on the table. Of course this objective of getting both internal and external balance was also the goal of Keynes and of my IMCU analysis. Which analysis, Keynes and my IMCU or the Swan diagram, provides a more useful tool is, I maintain, a very important question.

2. Temin and Vines (2015, p. 2) concedes that the devalued exchange rate proposal for the

debtor nation depends “technically...only if the Marshall Lerner conditions holds... [and] these conditions require that the positive substitution effect...is bigger...than the negative income effect.”

Temin and Vines’ “technically...only” comment regarding the Marshall-Lerner condition is again really a concession on their part that my criticism of the Swan Diagram emphasizes gross substitution effect while ignoring income effects is “technically” not wrong. But to be technically correct is, apparently in Temin and Vines’ view, “not an important question” in discussing theory and policy. They then tried to dismiss my technical Marshall-Lerner condition criticism completely by stating that “despite what Davidson says, *no serious person* thinks the Marshall-Lerner conditions do not hold” (Temin and Vines 2015, pp. 2-3, emphasis added). Yet, I have quoted a written statement from Ben Bernanke that the Marshall Lerner condition often does not hold, at least for a few years (in the short run?). Temin and Vines apparently do not consider the former Federal Reserve Chairman Bernanke “a serious person.”

3. Temin and Vines suggest that the Taylor rule permits the central bank to exogenously change its interest rate policy and therefore “changes in the finance demand for money of the kind highlighted by Davidson are of no significance” [Temin and Vines, 2015, p. 1].

Nevertheless I suggest that changes in Fed interest policy can (and, I would argue, are often designed to) alter entrepreneurial expectations and thereby change their investment plans for any interest rate. Changing entrepreneurial expectations of profitability of possible planned investments will bring into play the “finance motive” demand for money for planned investment. Thus even an exogenous change in interest rate policy can involve shifting IS and LM functions in the Hicks diagram. Consequently Temin and Vines [10/22/2015, pp.1-2] are not correct when they state that “it can be helpful to go on using the IS/LM system as an expositional device for

explaining Keynesian economics even although it does not describe reality.” Having convinced Hicks that the IS/LM is not a useful expositional device for explaining Keynes’s theory, I hope the reader sees Temin and Vines’ claim of it as a useful device for “Keynesian economics” does not mean it helps one understand Keynes’ *General Theory* or reality.

4. Temin and Vines [10/22/2015, p.2] admits “Davidson is right” when I declare the Swan diagram is, at best, a possible useful tool for a very small economy, but things are different when a large trading economy is involved. They also admits that “exchange rate warfare will develop” when one nation depreciates its exchange rate to improve its balance of trade without recognizing its affects on its trading partners. And Temin and Vines indicate that “this important point is widely understood”, even though the simple Swan diagram does not allow for such problems.

If it is “widely understood” why do Temin and Vines wait until the appendix of their book to even approach this question?

5. Temin and Vines [10/22/2015, p.2] notes that “if large countries act on their own...without considering the response of foreign countries...then there may well be a bad global outcome.”

But then why do Temin and Vines emphasize the Swan diagram as a useful tool for an individual nation to adopt exchange rate and fiscal deficit policies to assure full employment when it can result in “a bad global outcome”?

6. Temin and Vines [10/22/2015, p. 4] indicates that “Davidson is right to claim that the Temin-Vines book does not explain this two country story as clearly as it might have done... In a final chapter of our book we discuss the actions, and reactions...as a Prisoner’s Dilemma game...endangering the global recovery and leading to a sustained

period of recession.”

This possibility alone should lead a “serious person” to recognize that Keynes’s plan to provide a clearing union, similar to the IMCU system I laid out above, with rules of the road that lets each “prisoner” in the game know in advance the action of any creditor nation will be required to take to assure an external balance in international payments will promote global recovery.

7. Temin and Vines [10/22/2015, p.4] wants the same as “Davidson’s proposal for reform” with an international institution that penalizes any creditor nations who do not voluntarily spend down their excessive foreign reserves. This is item #6, the final item of my IMCU proposal. Apparently, however, they do not understand the necessity of the first five items in the IMCU proposal for they [Temin and Vines, 10/22/2015, p.5] comment that they “find it hard to agree with his first five points. But they do not seem necessary in order to underpin his important final point.”

These five points are designed to prevent large capital flows from disrupting the international payments system and prevent individuals speculating on future exchange rate changes as well as to maintain purchasing power (contractual settlement) of the IMCU in international contractual relations. On the other hand, it maybe that Vines believes that free private capital markets will operate efficiently and can prevent large cross border capital flows from creating disruptive forces on the global economy. In a paper Vines [2015, p.9, emphasis added] claims that after the breakdown of the Bretton Woods system, the 1970s was chaotic “because of the absence of a clear international policy framework. Order was only reestablished at the end of the decade when Paul Volker restored macroeconomic discipline in the United States and Margaret Thatcher did something similar in the United

Kingdom. Other advanced countries took even longer to adjust.

“A satisfactory global framework was re-established in the 1990s and growth resumed.

Amongst advanced countries, the Bretton Woods regime was replaced by the re-

emergence of a global non-system... [that] had active domestic macroeconomic

policymaking in the form of an inflation targeting regime – it was this that established

macroeconomic discipline in this new regime – but it imbedded this within an

international non-system of floating exchange rates in which there was no global

management of interactions between countries. Because of this change, the IMF’s earlier

role ceased to exist; the IMF became, instead, an institution to manage crisis in the third

world. But the WTO continued the work of GATT in promoting trade liberalization.

Private capital markets, rather than the World Bank, managed international capital flows.

“The result was a remarkable period of sustained economic growth and low inflation.”

Apparently Vines is willing to accept the view that cross border capital funds flow problems will not occur if one lets free private capital markets and floating exchange rates reign.

In fact, Temin and Vines in their comment on my earlier draft [10/22/2015, pp.10-11] state “the dominant view came to be that capital would flow to where it was most needed, that the private sector would look after itself, and disciplined fiscal policy would assure that national governments remained solvent. In such a world, external balance became a nonissue.”

I find it difficult to understand why anyone would still endorse such a “dominant view” after the global international financial crisis of 2008 resulted in the greatest global economic problems since the Great Depression. Free private international market financial flows was a major factor creating the global financial crisis of 2008. Since this global financial crisis, how can any “serious person” still argue that free world financial markets will always assure cross border

funds flow to where they are most needed? Surely the 21st century global economy requires some rules which encourage constraints on private capital markets to prevent these markets from again unleashing large international cross border flow of funds as occurred in the period leading up to the crisis.

Postscript: Response to November 23, 2015 Comments by Temin and Vines

Temin and Vines (11/23/2015) avoid directly addressing my criticisms of their advocacy of the Swan Diagram as a useful tool (1) for explaining Keynes' open economy macroeconomic theory and (2) for policy makers to use to improve their nation's economic position domestically and internationally. Temin and Vines indicate that I neither comprehend the correct "Keynesian" macroeconomic theory nor recognize relevant historical facts.

[1] They [11/23/2015, pp. 1-2] state that I do not recognize that "Keynes did not fully understand what he was doing... [For Keynes' writings are full of] "false starts and intuitive leaps." Temin and Vines write [11/23/2015, p. 1]: "Davidson's fealty as a person appears to have blinded him to the contributions that followed." They complain that "Davidson rejects contributions to Keynesian thought by Hicks and Samuelson...also ...Modigliani" [11/23/2015, p.1].

Temin and Vines believe that Keynes did not know or even understand what he was doing when, in developing his *General Theory*, he explicitly stated his explanation of involuntary unemployment did not require any assumption of rigidity in money wages. Furthermore, Keynes [1939] explicitly dismissed the Dunlop claim that explaining the cause of unemployment required assuming a lack of competition resulting in administered prices and/ or sticky money wages. Although Keynes was the greatest economic thinker of the 20th century, Temin and Vines believe that Keynes was not smart enough to understand what he was doing. Accordingly, T-V must be

assuming that Keynes was either using “intuition” or a “false start” rather than proving unemployment can occur even with fully flexible prices and wages.

Yet, as I noted, even in a general equilibrium system with fully flexible wages and prices and a Walrasian tatonnement auction, Hahn [1977] proved that involuntary unemployment will occur whenever there are ‘resting places’ for savings (out of current income) in the form of nonproducibles. Hahn proved that Keynes explanation of unemployment being caused by aggregate savings stored in nonproducibles liquid assets is correct even in a theoretical world where, in the short run or the long run, all wages and prices are freely flexible. The Hahn proof demonstrates that Temin and Vines are wrong when they insist that unemployment is solely due to the fact that “in the short run prices are not flexible. Growth can be held back because prices are too high and, as a result demand is too low” [Temin and Vines, 2014, p.1].

Temin and Vines take me to task for not recognizing the contributions of people like Samuelson and Modigliani to what Samuelson has labeled “neoclassical synthesis Keynesianism” – a theory that provides Walrasian neoclassical microfoundations for Samuelson’s macroeconomic theory. Temin and Vines fail to recognize Hahn demonstrated the incorrectness of Samuelson, Modigliani, and others in assuming that Keynes’ theory is merely a slowly adjusting Walrasian system where only stickiness in wages and prices can prevent a short run full employment Walrasian outcome.

Since Temin and Vines prefer the use of metaphors, then metaphorically speaking I must note that they are “blinded” by being “faithful to a religion” of the early work of Hicks, Samuelson, and Modigliani, who they suggest understood Keynesian theory better than Keynes. Although Hicks has stated that his IS/LM analysis is neither Keynes’s theory nor relevant to the real world, Temin and Vines [11/23/2015, p.4] still claim that the Hicks’ IS/LM model provides a

useful “metaphor” for policy decision makers to use “even although it does not describe reality.” I have not ignored the early writings of Hicks, who has agreed with my argument that his IS/LM model is fatally flawed. Furthermore, in two papers published in mainstream economic journals, (*Review of Economics and Statistics* [Davidson and Smolensky, 1964] and the *American Economic Review* [Davidson [1968)], I detailed the theoretical flaws in the “Keynesian” reasoning of both Modigliani and Samuelson in their early writings. Since neither Samuelson nor Modigliani ever provided a rejoinder to these articles, one can assume Samuelson and Modigliani could not find fault with our analysis.

I should also add that Arrow and Hahn in their book *General Competitive Equilibrium* [1971, pp. 256-7, emphasis added] explicitly state that even in a general equilibrium system “The terms in which contracts are made matter. In particular, if money is the goods in terms of which contracts are made, then the prices of goods in terms of money are of special significance. This is not the case if we consider an economy without a past or future.... If a *serious monetary theory* comes to be written, the fact that contracts are made in terms of money will be of considerable importance.”

Keynes wrote a “serious monetary theory” since his theory of liquidity recognized that (1) the economy has a past and an uncertain future, and (2) all market transactions are organized by the use of money contracts that specify money as the means of settlement for all spot and forward contractual obligations. The essence of a capitalist economic system involves a legal money contract system. This legal money contract analysis is absent from the works of Samuelson, Modigliani and others who, although these may label their theory as some form of “Keynesianism” are neither Keynes’ theory nor even a “serious monetary theory.”

This use of money to settle all market transaction contracts --including international

transaction contracts – is ignored in the Swan Diagram, where changing the exchange rate must alter the sum of the specified money that must be obtained to settle an international contractual obligation for the buyer or seller or both whenever any international forward contract spans the moment in calendar time when an exchange rate change occurs. This can create a liquidity problem in obtaining sufficient funds in terms of the money specified in the international contract -- a problem which apparently is not important to Temin and Vines or Swan! But it is important to Keynes in his international analysis and even important to entrepreneurs engaged in international contractual transactions in the world in which we live.

[2] Temin and Vines complain that my use of Thirlwall's Law "is inconsistent.... [For I] assume no change in relative prices for imports and exports.... Davidson clearly needs to have some fixed prices for his 'Keynesian' analysis...although he choose to hold the real exchange rate constant rather than wages" [p. 2]. Temin and Vines do not understand that I used Thirlwall's Law only to demonstrate that income effects can have important implications on the balance of international payments in addition to (besides) any gross substitution price effects. These income effects are ignored in the Swan Diagram. I did not introduce Thirlwall's Law as a means of substituting fixed exchange rates for fixed wages in an analysis of Keynes' macroeconomic theory for an open economy.

[3] Davidson "ignores the history of the plan in the two reorganizations of the postwar international payments system." [Temin and Vines, 11/23/2015, p. 2]. Also Temin and Vines "are writing about international problems after the global financial crisis of 2008. Davidson does not even acknowledge this important breakdown of the world financial system" [Temin and Vines, 11/23/2015, p. 2]

They claim that I have ignored two post war reorganizations of the original Bretton

Woods plan for international payments. This merely shows that they have not read my writings beginning with my developing the IMCU proposal [Davidson, 1987-8]. Moreover, long before the global financial crisis of 2008, in my book *Financial Markets, Money and the Real World* [2002, p.117] I noted that because of the way the market for financial assets such as mortgage derivatives are organized without rules that assured “orderliness” for any price changes occurring in these derivative markets, while free global financial market flows are permitted, these derivative markets were in danger of becoming disorderly and “at a future date could cause a horrific liquidity problem.” My analysis in my 2002 book provides evidence that I was aware of, and writing about, a possible financial crisis even before the global crisis occurred. Although Temin and Vines are still championing the Swan Diagram in their writings after the Global Financial Crisis of 2008, they fail to admit that the Swan Diagram has no place for analyzing whether international capital funds flows can create a possible international financial crisis. Yet, I have cited Keynes’ statements that international financial flows free of all possible regulation and control can create huge international financial problems. Keynes recognized the need for institutional rules regulating international capital movements and the need to free each nation’s policy makers from worrying about international repercussions in their attempt to promote domestic full employment. Keynes advocated international rules that (1) forced the onus of correcting payment imbalances among nations on the creditor nations, and (2) helped a government prevent international capital fund flows from creating economic problems for their nation’s economy. This institutional rules approach was the basis of the “Keynes Plan” at Bretton Woods and the six points of my IMCU proposal.

[4] Temin and Vines [11/23/2015, p.2] claim they only “are interested in models—particularly simple models.” They boast that the simple IS/LM model they often use is “not a description of

reality but as a metaphor for the way in which ... policy is actually conducted.” In that – metaphoric—sense Temin and Vines use a model as a Keynesian macroeconomic model, “*even though it might not describe reality at all realistically*” [T-V, 11/23/2015, p. 4, emphasis added]. On the other hand, they apparently are implicitly complaining that I want a theory that describes reality.

Wikipedia defines a metaphor as “a figure of speech that identifies something as being the same as an unrelated thing for rhetorical effect.” Rhetoric is language specifically designed to have a persuasive effect on its audience, even though rhetoric is often regarded as lacking in meaningful content. Temin and Vines admit they present some unrealistic rhetoric in their analysis.

Others have used unrealistic metaphors to advance economic arguments that they believe are relevant to the economic world of experience - even when the empirical facts fail to support the metaphor. For example, in the last two decades, those who advocate “austerity” and balancing government budgets as a way of achieving full employment prosperity and rapid economic growth rather than having government engage in deficit spending to improve economic performance, have invoked a metaphorical “confidence fairy” to support their argument for austerity. If the federal government stops deficit spending, then the “confidence fairy” will encourage entrepreneurs to have more optimistic expectations regarding the future. Entrepreneurs then will spend more on investment today, thereby creating jobs and economic growth. Unfortunately the policy of austerity in federal budgets in the USA has prevented the American economy from recovering from the 2008 recession as rapidly as the US economy has in past periods when deficits promoted recovery. Instead the USA and all advanced economies that have adopted austerity approaches since 2008 have suffered through a Great Recession, the worst

economic performance for the advanced economies since the Great Depression.

And even Temin and Vines, with their Swan diagram emphasis on government deficit policy to produce an “internal balance”, seem to believe that the “confidence fairy” metaphor is not a good simple rhetoric for policy makers to understand how to stimulate domestic demand for the products of domestic industries. Even the Taylor Rule metaphor that has led the Federal Reserve to maintain a close to zero interest rate for almost seven years has not induced the confidence fairy to sprinkle her magic dust of optimistic expectations on American entrepreneurs.

[6] Temin and Vines admit I am both right and wrong about the Swan Diagram. I am right in indicating the “simple“ Swan diagram model is, at best, applicable to only a small nation and not to large nations. T-V indicate that for these large nations the Swan diagram simple model has to be significantly modified (expanded?) to explain possible retaliatory policy movements and prisoner’s dilemma games, etc. Well, what then remains of the *simple* metaphor model they want to promote?

Following Keynes proposal at Bretton Woods, I have argued for an institutional rule that forces the creditor nation to accept the onus of relieving the debtor nation of an unfavorable balance of trade. Temin and Vines indicate they agree with point #6 of my IMCU proposal to “penalise surplus countries, and force them to adjust.” Although my point #6 is an “important one” Temin and Vines [11/23/2015, p.8] claim that this “point is already widely recognized” If penalizing the trade surplus nation principle is so widely recognized, why has the European Parliament and the European Central Bank not attempted to force Germany, the persistent surplus nation in the Eurozone, to accept the onus of making the necessary trade adjustment? Instead these institutions appear to support the German demand that Greece and other southern Mediterranean countries undergo strict austerity to solve their international financial and trade

balance problems.

Since Greece and these other southern Mediterranean nations have the same currency as their Euro trading partners, it is not possible for these deficit nations to look to a monetary exchange rate devaluation to achieve a trade balance. So clearly the Swan Diagram, whether modified or not, is useless in this case. Accordingly austerity can induce a more favorable trade balance for Greece only if austerity depresses the income of Greek workers and enterprises sufficiently so that a reduced price induces a gross substitution effect to reduce Greek imports from Germany (and the rest of the Eurozone nations) and significantly increases Greek exports to the Eurozone nations. The result will be socially distressing and divisive politically for all Greek residents. Would not an institutional rule such as item #6 of my IMCU proposal resolve the trade problem without causing dramatic social unrest within Europe?

Finally let me engage in a simple metaphor to promote my IMCU approach, rather than leaving it to free trade, free financial flows, and solving a Prisoner's dilemma game via a modified Swan diagram. My metaphor asks why we should have any legal rule enforcing automobile driving on the right side of the road in the USA and most of Europe and Asia and the left side of the road in the UK and some former colonies. Why not leave it to freedom of choice to drivers to decide on which side of the road they want to use in any country? In this freedom of road side choice, after enough deadly accidents occur, will not the surviving drivers recognize they are involved in the equivalent of a Prisoner's Dilemma game? Why do we need a legal rule of the road that forces cooperation by penalizing drivers who make the wrong choice on which side to drive?

I suspect I know which solution most of the readers will choose between a legal rule of the road that forces cooperation among drivers vs. Prisoners' Dilemma game theory to work out a

cooperative result. I know I prefer a legal institutional rule that penalizes drivers who do not accept the social cooperative choice of driving on the legally specified correct side of the road. I suspect Temin and Vines would want a legal rule of the road rather than solving this driving problem via a Prisoner's Dilemma or a Nash Equilibrium model. And Temin would choose to drive on the right side of the road, while Vines would choose the left side.

CITATIONS

Abel, A. B. and Bernanke, B.S. (1992), *Macroeconomics*, New York, Addison Wesley.

Arrow, K. J. and Hahn, F.H. [1971], *General Competitive Equilibrium*, San Francisco, Holden-Day.

Colander, D. C. And Landreth, H (1996). *The Coming of Keynesianism To America*. Elgar, Cheltenham.

Davidson, P. and Smolensky, E. [1964] "Modigliani on the Interaction of Monetary and Real Phenomena", *Review of Economics and Statistics*, 45.

Davidson, P. [1968] "The Demand and Supply of Securities and Economic Growth and Its Implications for the Kaldor-Pasinetti Versus Samuelson-Modigliani Controversy", *American Economic Review*, 57.

Davidson, P. [1965], "Keynes' Finance Motive", *Oxford Economic Papers*, 17.

Davidson, P. (1972), *Money and The Real World*. London: Macmillan

Davidson, P [1977] "Discussion of the paper by Professor Leijonhufvud", in *The Microfoundations of Macroeconomics*, edited by G. C. Harcourt, London, Macmillan.

Davidson, P [1982-1983], "Rational Expectations: A Fallacious Foundation For studying Crucial Decision Making Processes", *Journal of Post Keynesian Economics*, 5

Davidson, P. [1987-1988], "A Modest Set of Proposals for Solving the International Debt Crisis"

in *Journal of Post Keynesian Economics*, 10..

Davidson, P., (2002), *Financial Markets, Money and the Real World*, Cheltenham, Edward Elgar.

Davidson, P (2007), *John Maynard Keynes*, London. Macmillan.

Davidson, P. (2009), *The Keynes Solution: The Path to Global Economic Prosperity*: New York, Palgrave/Macmillan.

Davidson, P.(2011), *Post Keynesian Macroeconomic Theory*, 2nd Edition. Cheltenham, Elgar.

Davidson, P. (2015), *Post Keynesian Theory and Policy*, Cheltenham, Elgar.

Dunlop, J. G. (1938) "The Movement of Real and Money Wages" *The Economic Journal*, 58.,

Hahn, F. A. (1977). "Keynesian Economics and General Equilibrium Theory" in *The*

Microfoundations of Macroeconomics, edited by G. C. Harcourt. London, Macmillan.

Harrod, R. F. [1933], *International Economics*, Cambridge University Press, Cambridge.

Hicks, J. R.[1976] "Some Questions of Time in Economics" in *Evolution, Welfare and Time in*

Economics, edited by A.M. Tang, F. Westerfield, and J. S. Worsley, Lexington, Heath Books.

Hicks, J. R., [1979] *Causality in Economics*, New York, Basic Books.

Hicks, J. R. [1980-1981] "ISLM: An Explanation", *Journal of Post Keynesian Economics*, 3.

Keynes, J. M. (1935), "A Monetary Theory of Production" in *The Collected Writings of John Maynard Keynes, XIII*, edited by D. Moggridge. London, Macmillan, 1973a. All references are to reprint.

Keynes, J. M. (1936), *The General Theory of Employment, Interest, and Money*. New York, Harcourt, Brace.

Keynes, J. M. [1937] "Alternative Theories of the Rate of Interest", *Economic Journal* . 47.

Keynes, J. M. (1939), "Relative Movements of Real Wages and Output", *The Economic Journal*, 49, reprinted in *The Collected Writings of John Maynard Keynes, XIV*, edited by D. Moggridge. London, Macmillan, 1973b. All references are to reprint.

Keynes, J. M. [1941] "Proposal for An International Currency Union" reprinted in *The Collected Writings of John Maynard Keynes*, vol. 25, edited by D. Moggridge, Cambridge, 1980. All page references are to the reprint.

Samuelson, P. A. (1947), *Foundations of Economic Analysis*. Cambridge, Harvard University Press.

Samuelson, P. A. (1969) "Classical and Neoclassical Theory" in *Monetary Theory*, edited by R. W. Clower, London, Penguin.

Swan, T. [1955], "Longer Run Problems of the Balance of Payments" reprinted in *Readings in International Economics*, edited by R. Caves and H. Johnson, Irwin, Homewood, [1968]

Temin P and Vines, D. [2013], *The Leaderless Economy: Why The World Economic System Fell Apart and How to Fix It*, Princeton. Princeton University Press.

Temin, P. and Vines, D. "Why Keynes Is Important Today", *Institute For New Economic Thinking*, October 28, 2014

Temin, P. and Vines, D. (10/22/2015) "Comments" on paper by Paul Davidson."

Temin, P. and Vines, D (11/23/2015) "Comments on previous Draft of 'The Fallacy of the Temin-Vines Claim...' by Paul Davidson."

Thirlwall, A. P. [1979], "The Balance of Payments Constraint as an Explanation of International Growth Rate Differences", *Banca Nazionale del Lavoro Quarterly Review*, 128.

Vines, D (2015a), "When Macroeconomic Policy Cooperation is Helpful and When it Is Not" a chapter to be published in *Managing Complexity: Economic Policy Cooperation After The Crisis*, edited by T. Bayoummni, S. Pickford, and P. Subacchi to be published by Brookings Press. All

references are to typed copy received from David Vines.

ENDNOTES

¹ Thus any policy to change exchange rates can create liquidity problems for buyers and/or sellers already committed to a contract specifying payment in a specific currency at a specific time after the change in the exchange rate.

² Temin and Vines [2013, p.263] use a strange definition of “full employment” when they state “we normally define full employment as the highest employment consistent with stable prices.” Earlier Temin and Vines [2013, p. 261] defined this full employment concept as being “large enough to fully use all the resources in the economy...which means that labor is fully employed.” Accordingly, the page 261 definition of full employment is consistent with the Keynes full employment concept where the real wage equals the marginal disutility of labor. Their page 263 definition of full employment suggests that if the money wage rate in the economy increases -- increasing production costs and market prices [inflation] -- then labor full employment can exist while the real wage still exceed the marginal disutility of labor. The page 263 definition is basically Milton Friedman’s “natural rate of unemployment” and is a definition that is inconsistent with the Keynes and classical theory definition.

³ A more detailed analysis of how mainstream macroeconomics is not Keynes’s economics is presented in Davidson, [2015, chapter 5].