Chapter 12

Q&A Based on James Tobin (1980):
Consistency between Statistics and Endogenous Data[1]

Foreword to Chapter 12

The author most respects Tobin's personality through his performances. This is the author's motivation to briefly write this chapter 'Q&A based on James Tobin (1980),' as the first publication starting several Q&A series. Apparently, the literature and the author's "*Earth Endogenous System*" (1st 2013 and 2nd 2014, hereunder the *EES*) differs significantly, commonly under the same market principles. This chapter proves that both sides have the same essence of macroeconomics. More concretely, one side uses actual statistics data while the other side endogenous data but, both sides cooperate and maintain everlasting consistency over years. This is because the author could show a fact that statistics data are each within a certain range of endogenous data, by scientifically using the same two dimensional plane.

Therefore, Tobin (1980, hereunder Tobin) does not contradict the *EES* and its database, i.e., or the Kamiryo Endogenous World Table (KEWT) database series. This chapter follows the structure of Tobin in PART 1: starting Section I and ending Section IV and, in each section Tobin is compared with the *EES* and its database. Presentation form is questions and answers (Q&A). Essential points of Tobin (bold letters) are each raised by Questions and, each solution is stated by Answers using the author's *EES* and its database. However, to be understandable to readers or anyone, Answers do not step into hundreds of endogenous equations. For both-side equations, this chapter separately

explains equations in PART 2, based on Tobin's most fundamental equations and dividing these into two; (1) First half equations by James Tobin (pp. 68-69, 1980) and (2) Second half equations by James Tobin (pp. 86-88, 1980). As a result, this chapter clarifies a new fact that the essence of Tobin and cited papers holds consistently with purely endogenous and, beyond space and time.

> **Signposts to Chapter 12:** the *EES* (Earth Endogenous System); full-employment; money-neutral; the market principles; the endogenous-equilibrium; the price-equilibrium; structural *BOP* and deficit; stop statistics data; endogenous data; macro-inequality; the relative share of capital-neutral (α-neutral); the real rate of return equals zero (*RRR*=0); inflation/deflation; assets-bubbles; consumption-neutral to growth and technology; the two-dimensional plane; Lucas, Phelps, Phillips, and Kaldor

1. Introduction

This chapter is composed of two parts. Part 1 clarifies the difference, similarity, and identity between the *EES* (i.e., the author's *Earth Endogenous System*, xlviii+568, 15 May 2013, Better Advances Press, Toronto) and James Tobin's *Asset Accumulation and Economic Activity* (99, 1980). The author believes that Tobin's book (1980) never becomes old-fashioned and holds everlasting as a bright lighthouse and a modest ray in the literature. This is because the author thinks that Tobin's book challenges for the limit of macroeconomics under the market principles. In other words, no one could express an iron lying between the market principles and the literature, except for Tobin's book.

In Part 2, this chapter clarifies the relationship between eleven conclusive equations shown in Tobin's book, by comparing these eleven equations (pp. 68-69 in section III and, second half, pp. 86-88 in section IV, 73-96) with equations formulated and measured in the *EES*.

Section I in Part 1: Each answer explains one point so that readers understand the whole pictures of the *EES* gradually. Answers in other Sections II and III, each deepens differences and identities gradually and introduces new discoveries incidentally found soon after the *EES* publication. Answers in Section VI in Part 1 direct a goal how to utilize the *EES*, its database, and recursive programming for the transitional path, cooperatively by country and by sector.

The following two paragraphs, pages 41 and 42, in Tobin's "The Monetarist Counter-Revolution Today--An Appraisal," *The Economic Journal* 91, 361 (1981) was written by Tobin himself to the 'Introduction' of his book in Japanese, translated by Koichi Hamada and Shiro Yabushita (176p., 6 Nov 1981, Nikkei Newspaper Press).

The synthesis of revolution and counter-revolution that Harry Johnson expected in 1970 has not yet occurred. Instead the gulf has widened, as the advent of Monetarism II prolonged the life of the counter-revolution. I think nonetheless that the synthetic phase of the dialectic is beginning. The synthesis will not be, to the extent that Johnson predicted, the disappearance of monetarism into an eclectic neoclassical neo-Keynesian mainstream. The ideas of the second counter-revolution are too distinctive and too powerful to be lost in the shuffle. They are bound to shape whatever orthodoxy emerges. The durable ideas are more methodological than substantive – internally consistent derivation of rational expectations and rational behaviour, embodied in the structural equations of a general equilibrium macro-economic model. These ideas are already being mobilised not just to exalt the Invisible Hand but to explain the

[1] Robert E. Lucas, 'Econometric policy evaluation: a critique', in Karl Brunner and Allan H. Meltzer (eds.), *The Phillips Curve and Labor Markets*, Carnegie-Rochester Conference Series on Public Policy, vol. 1 (Amsterdam: North-Holland, 1976), pp. 19–46.
[2] Christopher Sims, 'Macroeconomics and reality', *Econometrica*, (January 1980), pp. 1–48.

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causes and effects of informational imperfections, long-term contracts and other commitments, incompleteness of capital markets, liquidity constraints, and many other phenomena of common observation. As the process bears fruit, Keynesian problems will be interpreted in a new light but will not disappear or be dismissed as theoretical impossibilities. There will be plenty of room for compensatory demand management, both in theoretical models and in real economies, and improved understanding how to use it. As this scientific synthesis proceeds, monetarism will lose the polar simplicity essential to its ideological appeal, which will in any case be eroded by disillusionment with the results of policies identified with monetarism. If I am right in these guesses, Joseph Schumpeter's faith in the fruitful interaction of science and ideology will be once more vindicated.

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PART 1

Questions and Answers (Q&A) on fiscal policy modeling

Conclusively, the Q&A is tied up with the relationship between the endogenous-equilibrium and the price-equilibrium. One of the author's new discoveries proves an identity of the two equilibriums. As a result, the difference between the author's *Earth Endogenous System* (lxviii+568, 2013; lxiv+570, 2014; hereunder simply, the *EES*) and fiscal policy modeling in the

literature will disappear. Vertical constrains indispensable in the market principles are absorbed into a united system as a whole.

Section I   Real Balance Effects Reconsidered (pp. 1-19)

(under *Keynes and Unemployment Equilibrium*, 1-5).

Q1-1 (p.3):   Special position of work force, whether it is organized or not, individually and collectively, derives from firm-specific skill and daily experiences.

A1-1:   This statement does not distinguish polices, macro and micro, with strategies, macro and micro.   The *EES* is policy-orientation at a macro level and, strategies externally support policies, macro and micro.

(*Liquidity Trap* is the situation in which interest rates relevant to are already as low as they can go).

Q1-2 (p.3):   **Liquidity trap** is the situation in which interest tares relevant to investment are already as low as they can go.

The absolute floor for nominal **interest rates is zero;** the return on money itself. The effective floor, at which people will be indifferent between holding money idle and buying interest-bearing assets, might be Keynes' thought, **a bit above zero**.

A1-2:   The above statement or the literature supposes that the rate of profit is close to zero but, without theoretical proof and under rational expectations.   New discovery developed in the *EES* surprisingly proves that the real rate of return=zero (*RRR*=0).

Q1-3 (p.6). Deflation raised the burden of the debts as much as the real value of the assets. As Pigou acknowledged, the correction left him with a much smaller net base. One component is the part of the public's money stock supplied directly by the government.

The monetary base or **high-powered money** or **outside money**:   The quantity of currency and coin and their equivalent in central bank deposits is held as bank reserves, p.6.

A1-3:   The literature distinguishes the monetary base with debts.   The literature distinguishes fiscal policy with real-assets policy because the literature cannot establish a whole *mechanics* in the real assets in the SNA (1993, 2010).   The *EES* is based on the real assets and, fiscal policy is included in the real-assets policy.

Q1-4 (p.7).   The Wicksellian natural interest rate, equating full employment saving and investment, would be well in the positive orthant and the Keynesian impasse would be escaped.

(Fisher's position: the casual "washing out" of private debts and credits in the reckoning of the base for the Pigou effect).

A1-4:   The literature discusses saving and net investment directly but, separately from consumption under a given rate of technological progress, a given interest rate, and a given rate of unemployment.   The *EES* integrates consumption, saving, net investment, wages, and returns, where an endogenous rate of technological progress is measured simultaneously.   As a result, the nominal rate of return=the rate of inflation is measured under full-employment.

(under *Irving Fisher on Deflation and Debt*, 9-11).

Q1-5 (p. 10).   For Fisher in 1932-3, more than Keynes in 1936, **raising prices** was a step **indispensable to recovery;** not just an incidental byproduct of other measures.

   I (Tobin) recall Fisher's position not solely from Yale patriotism but to bringing our attention back to the causal "washing out" of private debts and credits in the reckoning of the base for the Pigou effect.   The gross amount of the "inside" assets was and is orders of magnitude larger than the net amount of the base.

   Aggregation would not matter if we could be sure that the marginal propensities to spend from wealth were the same for both creditors and debtors.   But if the spending propensity were systematically greater for debtors, even by a small amount, the Pigou effect would be swamped by this Fisher effect.

A1-5:   The literature discusses the rate of deflation seriously but, without finding its true cause.   The *EES* finds that the true cause of deflation is government deficit larger than government saving by year and proves the Pigou effect.   The rate of return and accordingly the growth rate of output are most optimal at deficit=0, as Samuelson earlier proved it mathematically.

Q1-6 (p.11)   Maybe Leontief is right that sufficient deflation would make existing coins capable of buying the whole GNP.   It would also make existing debts an astronomical multiple of the GDP.

A1-6:   The literature models households (creditors) and enterprises (borrowers) just after tax redistribution for national disposable income.   The literature, nevertheless, expresses the results of deflation as it is.   The *EES* proves how deflation is a resultant phenomenon under the endogenous-equilibrium so that deflation cannot be managed directly.

(under *Prices and Output in Short-run Macro Models*, 12-18).

Q1-7 (p.13)   Particularly at high levels of output and interest, far from the liquidity trap, it may well dominate any direct price level effects on wealth and spending.   The curvature of the liquidity preference schedule, then, contributes asymmetry to the

situation.

Altogether, aggregate demand could be positively related to price level at lower levels of output and interest rates but negatively related closer to full employment.   This does open some possibility of multiple equilibria.

A1-7:   The market principles determine price levels.   Deflation and inflation are symmetrical. The *EES* proves that deflation and inflation are symmetrical, by hyperbolic reduced form of endogenous equation under no assumption.

(under *Conclusion for Theory and Policy*, 18-19).

Q1-8 (p.18)   Now expected deflation increases the demand for money, making it more attractive relative to other assets, particularly to goods and equities in goods. This effect counters the price level effect and may be stronger.   If so, deflation does not correct the initial deficiency in aggregate demand that triggered it. Then deflation has no stopping point.   The symmetrical case is hyper-inflation, in which the velocity of money rises astronomically.

A1-8 as conclusions: The literature correctly catches deflation and inflation using demand and supply curves, IS/LM models, rational expectations, and market-clearing.   However, the consistency is partial due to the market principles.   The *EES* expresses all the causes and results simultaneously and symmetrically, particularly for deflation and inflation.

Q1-9 (p.19)   Pigou succeeds in restricting "equilibrium" to situations in which markets clear, using market clearing price.   Keynes's proposed equilibrium does not qualify with involuntary unemployment.

A1-9:   The market-clearing is close to God's decision yet, it does not clarify the essence of equilibrium by itself.   The *EES* directed this unsolved problem and was produced to solve indispensable defect of the market-cleaning.

Section II   Policies, Expectations, and Stabilization (pp. 20-48)

Q2-1 (p.22)   The two new pillars of the new classical macroeconomics are *rational expectations* and *continuous market-clearing*.   Of the two, I (Tobin) shall argue, it is the second which is crucial for the far-reaching implications of the doctrine.

A2-1:   A set of rational expectations and market-clearing saves the limit of macroeconomics restriction.   The current macroeconomics cannot establish a *mechanics* by the real assets since the market principle does not allow for macroeconomics to step into real-assets *mechanics*.   The *EES* does not require any condition for rational expectations and market-clearing.   Further the *EES*

reinforces the market principles that guarantee market-clearing. The market principles and the *EES* are united based on the real assets, where money-neutral (one of basic cores of the *EES*) prevails everlastingly.

(under *Expectations and Macro-economic Theory*, 22-29).

Q2-2 (p.23)   The service two authors (Arrow, 1953; Debreu, 1959) have rendered us in this ingenious construction is to show how important it is for the economy, and for economists, to cope with **the future**, in their construction, the list of commodities—hence of contingencies and dates—**must be known**.

A2-2:   Macroeconomics needs two; forecasting and known data for the future. Macroeconomics and econometrics have developed profound tools and devices for solving this pursue over years.   These experiments are invaluable and no one can deny these essentials.   The *EES* expresses theoretical data=practical data simultaneously so that the *EES* is free from forecasting and estimation under assumptions.   The time when both sides can cooperate each other will soon appear, since endogenous data are originally measured theoretical data by country, sector, and year and over years.   Please think of the difference between estimate and measure.

Q2-3 (p.25)   Keynesian theory in its original formulation was open to criticism on this score.   For example, the "speculative motive" for **liquidity preference** assumed long term **interest rates** were held up by expectations that short rates would return to normal levels.   Though possibly realistic this explanation was inconsistent with **an equilibrium** implying stable short term interest rates and stable calculations of marginal efficiency of capital.   That is, incidentally, why I (Tobin) proposed an alternative theory of liquidity preferences free of the inconsistency between **actual** and **expected** interest rates (see Tobin, Liquidity Preferences, *RES*, 1958).

A2-3:   Macroeconomics produces a lot of definitions under corresponding assumptions and under the market-clearing but without whole consistency.   Nevertheless, Macroeconomics is tightly connected with the *EES*.   New discoveries, particularly money-neutral (as shown in IAES conference, 12 Oct 2013), are close to an external essence of liquidity preference and interest rate. Money-neutral reaches a conclusive fact that the real rate of interest as well as the real rate of return is zero (*RRR*=0), which shows that liquidity preference is solely related to inflation/deflation.

(under *Endogenous Expectations and the Effectiveness of Policies*, 29-32).

Q2-4 (p.29)   Probably the most striking propositions of the "rational expectations" school

concern the consequences of **expectations about policies** (Note 7, Lucas, 1976). Some of the points are, it is true, neither controversial nor new. Among them are, for example, the common sense observations that the expected duration of a tax or tax cut or tax credit affects its economic impact.

A more general point well taken is that the structure of economic behavior, including response to policy, depends upon **expectations about policy**. Estimates or descriptions of structure derived from observations under one regime of policy will frequently become obsolete if the *modus operandi* and objectives of policymakers change. Policy multipliers calculated from the obsolete structure will, to the confusion of econometricians and to the dismay of policymakers, prove inapplicable in the near future.

A2-4: Macroeconomics conquers the problem of 'expectations about policy' by utilizing the endogenous data and new discoveries developed in the *EES*. The *EES* rejects any sort of expectations as a tool or device. There is no 'new or obsolete' under causes=results holds simultaneously. Practice=policy exists and that 'by learning by doing' over fiscal years.

(under *Economic Fluctuations as Moving Equilibrium*, 35-44).

Q2-5 (pp. 36-37) If these markets are always clearing, the sources of fluctuation must be shifting **demand and supply curves**, rather than movements away from and toward their intersection.

Why should these shifts produce the smooth waves of observed cycles rather than irregular noise around steady trends? He (Note 18, Lucas, 1978) answers; the new classical macro-economists comes from outside the basic model, **auto regression** in the exogenous shocks of **technology and taste**.

A2-5: Demand and supply curves are hardly connected with technology and taste. New discovery, technology-neutral (a paper presented to a journal, under review before March 31st, 2015), proves a fact that technical progress is independent of national taste, preferences, culture, and history by country. Auto regression is replaced by $R=R^2=1.0000000$ and free from Bayesian probability.

Q2-6 (pp. 38-39) The **Keynes-Phillips** interpretation was subject to two waves of attack. The first was due to E. S. Phelps and Milton Friedman (**Phelps-Friedman**). They pointed out that the price trend is itself endogenous, so that the trade-off of unemployment for inflation is not as favorable in the long run as in the short run.

A2-6: Finding by Keynes-Phillips is true in their side and also, finding by Phelps-Friedman is true in their side. When these findings are integrated into a whole system under perfect competition, both sides express the same finding, as proved in the two dimensional plane (2DPH) or by using hyperbola immediately

rotating in four quadrants. This is because money-neutral prevails beyond space and time in geographical topology, with technology-neutral. Natural rate of unemployment exists only when the situation is away from perfect competition measured in the Kamiryo Endogenous World Table (KEWT) database.

Q2-7 (p.41)   Thus **Lucas** model explains the same gross observations as Keynesian theory and the Phelps-Friedman hypothesis. But it has very different policy implications from both of those models. Policy can never make more than a transient difference to real outcomes, and anyway the transient differences always a non-optimal distortion.

For **Luca**s, this is true regardless of the observed state of the economy, whether unemployment and excess capacity are high or low. In short, the "**natural rate**," at least in the sense relevant for policymakers is whatever situation prevails.

Whatever **the initial conditions**, the policymakers can produce a lasting increase in output and employment only by an escalating sequence of unexpected inflationary **shocks**.

A2-7:   The initial condition is most important in macroeconomics. The *EES* and its KEWT database are free from the initial condition. Temporarily at the beginning, the KEWT database enters an initial data into the capital stock by sector for 50 years or so. With immediate operations in the Excel, the initial capital stock turns to endogenous one, where the capital-output ratio is most smooth and flat over years, as proved by Samuelson (1970). All the parameters and variables turn to endogenous, based on seven endogenous parameters. This is confirmed by recursive programming by year for the transitional path. The KEWT database (currently, 9.15, 1960-2013 by-sector) and its recursive programming are always everlastingly consistent under the rate of unemployment=0. *RRR*=0 matches the rate of unemployment=0, regardless of the level of rate of inflation/deflation.

Q2-8 (p.42)   The **Lucas** model is very important and influential, both for its substance and for its exemplary lessons for statistical inference and for policy. Consequently it is desirable to see clearly where the conclusions come from. Of course, the twin assumptions—market-clearing and rational expectations—are essential. But so also is the **ad hoc** specification about the information available to buyers and sellers. It is this specification that enables the model to "explain" the observed **correlation** of nominal prices and real quantities.

Lucas's critique of Keynesian models and Phillips curves may or may not be justified. The point is that the capacity of his new macroeconomic theory to explain observations, without very questionable *ad hoc* **assumptions** for which no empirical evidence is offered, is exceedingly limited.

A2-8: The *EES* has not been born without Lucas's (1970) critique on policy evaluation. New discovery, technology-neutral, answers Lucas's plausible question here. Money expresses quality=1.0000000. This is connected with three typical facts; i) the relative price level p=1.0000000, ii) the absolute price level P=1.0000000, and iii) the elasticity of substitution $\sigma = 1.0000000$. As a result, price problems are all solved at a macro level by economy, and policy-makers simply manage to solve economic, real, fiscal, financial, and market, polices.

Q2-9 (p.43)   Why do real wages and average labor productivity almost always move **cyclically**?   Why do firms report utilization of capacity below preferred **normal** operating rates?   Why, if cyclical variations of employment reflect voluntary choice, is workers' consumption so procyclically and their average propensity to consume so counter-cyclical?   These and other **stylized facts** appear difficult to reconcile with new classical model, but we may expect considerable ingenuity to be expended in attempts to reconcile them.

A2-9: Wages and profits are always consistent with consumption, saving, net investment in the *EES* and its KEWT.   The relative share of capital is fixed by year, but the capital-output ratio, $\Omega = \Omega^* = \Omega_0$, and the rate of return, $r = r^* = r_0$, changes in the transitional path by point of time.   The speed years for convergence, by country and by sector, each control $\alpha = \Omega \cdot r$.   The relative share of capital-neutral (α-neutral in one of three sister papers) guarantees stop macro-inequality.   Macro-inequality is independent of the level of the relative share of capital.   Stylized facts (Kaldor, 1957) remains partial since these facts are not wholly systematized.   Normal level is replaced by optimum level in the 2DPH, where parabola (profits-maximum) in the literature is composed in hyperbola (returns maximized under net investment minimized).

Q2-10 (pp. 43-44)   The difference of the new classical from the old one is, of course, that they apply the axiom to short runs, very short runs, not just to the comparative statics of **equilibrium** positions.

The new classical view that prices, including wages, are always **market-clearing** is basically the old classical **equilibrium assumption** that prices are flexible.   As such, it has a number of familiar corollaries.

One, for example, is that the real interest rate is always Wicksell's natural rate, clearing the investment/saving market.   Attempt to move it by monetary policy directed at lowering or raising the nominal interest rate will fail; they will only change price levels and inflation rates.   Another iron law concerns real terms of trade; they cannot be altered by devaluation or revaluation of exchange rates, and they will be the same under floating and fixed rate regimes.   The "**fundamental**" determinants prevail over policy every time.

A2-10: The *EES* most modestly expresses fundamentals by economy. This is because the *EES* does not need an assumption that cash flows are consistent with real assets by the use of just before tax redistribution for national disposable income, $Y = C + S = W + \Pi$. As a result, the *EES* accurately measures the government sector, particularly when government savings zero and negative (e.g., Japan after 1991). Crowing-out is accurately measured by year so that policy-makers cannot be involved in window-dressing.

Q2-11 (p.45) There is, in short, no expectations disappointment in these policy applications of the short-run IS-LM-Phillips curve model. What is lacks, consciously and deliberately, certainly not inadvertently, is universal continuous market-clearing.

This is not deny that widespread public belief in monetarists dogma can generate actual expectations that make things tough for expansionary fiscal and monetary policies in situations of under-employment. It is to deny that such belief are rational.

It is also true that if the economy is not always in **market-clearing equilibrium**, rational expectations will not necessarily keep it there without the help of macro policy.

A2-11: Market-clearing equilibrium friendly examines/tests and confirms money-neutral or the qualitative level of the endogenous-equilibrium by money M2, ten year debt yield, and the exchange rate by country. Policy-makers execute the test beyond space and time, most reliably over years. True causes always appear in endogenous data and policy-makers delete true causes by decision-making in the short run and long run. Policy-makers need to image one hundred ahead targets by country.

Q2-12 (pp.47-48) We should not be diverted from the task by the new classical macroeconomics, an intellectually ingenious construct that does not describe the societies in which we happen to live.

Martin Baily has proved once more that a picture is worth a thousand words. His picture, reproduced here as Figure 8, shows how much more stable real output has been in the United States under conscious policies of built-in and discretionary stabilization adopted since 1946 and particularly since 1961.

A2-12 as conclusions: The above answers all prove that macro-economists have contributed to economic society improvement day and night. For example, this fact is shown below. The data changes become smooth and calm after the 2nd world war, as pointed out by Baily (1978) and cited by Tobin (1980). This fact simultaneously expresses that statistics and endogenous data are integrated cooperatively.

Figure 1. The Rate of Growth of Real Gross National Product, 1901–76

Sources: U.S. Bureau of the Census, *Historical Statistics of the United States: Colonial Times to 1970*, pt. 1 (Government Printing Office, 1975), series F3; *Economic Report of the President*, January 1977, p. 188; *Survey of Current Business*, vol. 57 (July 1977), table 1.2.
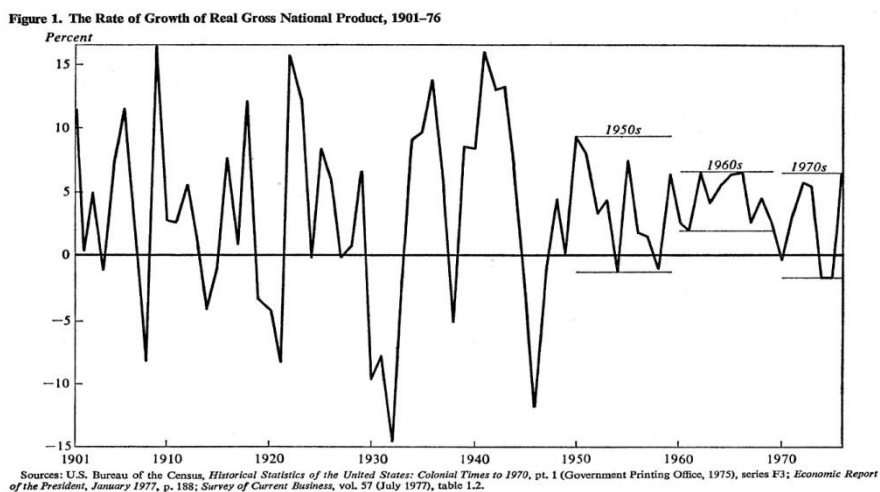
Figure 1 James Tobin (1980, pp. 47- 48), cited from M. N. Baily (1978, Figure 8, p.14)

Section III   Government Deficits and Capital Accumulation (pp.49-72)

(under *The "Recardian" Doctrine and its Implication*, 49-54).

Q3-1 (p.50)   To provide for the future taxes, household will save more, precisely enough to purchase the new government securities. Aggregate household wealth is unchanged, and so is aggregate consumption. **Deferment of taxes** accomplishes nothing, for good or evil. Given the present value of tax liabilities, discounted at the interest rate on government securities, the timing of the taxes makes no differences.

James Buchanan calls this doctrine Ricardian, and it is true that Ricardo presented the argument with characteristic clarity. However, he also added important qualifications and concluded that determinant of taxes by **internal borrowing** is bad fiscal policy. In spite of its inaccuracy I shall use Buchanan's term for convenience.

A3-1:   Fiscal policy in the literature is generally right. The *EES* proves its righteousness. Sustainability by country, economy, and area is guaranteed most if deficit=zero.

Q3-2 (p.51)   *The Pigou effect.* In the first lecture, if deficit finance is ineffectual, it is also innocuous. It does not "**crowd out**" private capital formulation or foreign investment. Nor can timid or profligate legislatures and ministers be blamed for inflation, so long as they are willing to finance their deficits by interest-bearing bonds rather than by printing money. This is why the Ricardian view is as unpalatable to fiscal conservatives like Buchanan as to Keynesians.

A3-2:   Fiscal policy is perfectly neutral only at a point of deficit=zero. Crowd-out is a

result.   Animal spirit cannot continuously improve the condition of crow-out.

Q3-3 (p.52)   Note the parallelism of short and long run.   Keynesians believe that expansionary fiscal policy works in situations of underemployment because deficits absorb saving which, in the absence of sufficient private investment demand, would vanish via contraction of income.   By the same token, they believe that in the long run full employment states public debt satisfies some demand for wealth and displaces some capital.   Ricardians believe that deficit spending is futile in the short run and innocuous in the long run.

The Pigou effect.   In the first lecture I (Tobin) revisited the "real balance" effect and recalled the controversy about the proper base for its calculations.   Does the base include all public debt or only monetary issue or nothing?   The Recardian position would be that a permanent reduction in the price level increases equally the real value of the government's non-monetary obligations and the real value of the associated tax liabilities. The "Keynesian" view would support the Pigou effect, reckoning a greater consumption stimulus for the government's creditors than consumption deterrent to future taxpayers.

A3-3:   Fiscal policy improves the rate of unemployment but, only by steadily decreasing the level of deficit by year.   Subsidies and attractive government consumption do not solve problems essentially.

(under *Critique of Ricardian Doctrine as Restated by Barro*, 54-63).

Q3-4 (p. 55)   Barro's contribution is to show how mortal households can have effectively infinite horizons.   The condition is that each generation includes in its utility function, along with consumption at various stages of its lifetime, the *utility* of the next generation.

A3-4:   Barro's point certainly contributes to fiscal policy development.   The *EES* absorbs its spirit and reflects it for topological philosophy.   The *EES* nevertheless holds beyond space and time so that the differences between generations disappear.   Two-dimensional topology proves this fact at a macro base.

Q3-5 (p. 58)   Moreover, some households will, as Barro argues, increase their bequests or gifts to heirs rather than their own lifetime consumption, partially if not wholly alleviating the higher taxes their children must pay to support their parents' retirement insurance benefits.   For a combination of reasons, therefore, Feldstein (1974, 1980) and others are probably overstating their case that pay-as-you-go social security diminishes **capital formation**.

A3-5:   The essence of fiscal policy is to spend minimum level of government net investment and serve optimum level of total returns by country.   The government size is endogenously measured by the ratio of taxes to output;

$G_{SIZE} = Y_G/Y = TAXES/Y$. The size of government, Y_G/Y, determines the total economy even though the size is small. Dynamic balances between government and private sectors surprisingly depend on the size, as proved in the *EES* and the KEWT database series.

Q3-6 (p. 62)   We can imagine fiscal policies and associated expectations under which both Ricardian and Keynesian scenarios are self-consistent. This is not surprising. "Rational expectations" paths are generally not unique when the system is not in equilibrium. If annual budget balance were the objective of fiscal policy, as in the days of the British "Treasury View," shared by President Herbert Hoover and the last Weimar Chancellor, Heinrich Bruening, the appearance of a deficit during cyclical recession would lead to expectations of higher taxes and accelerate the recession. If full employment budget balance is the understood objective, tax increases will not be expected during recessions and periods of under-employment. Then tax expectations and related expenditure decisions will support the understood countercyclical policy. Baily shows that this may well have happened in the United States after the second world war, especially in the 1960s.

A3-6:   Fiscal policy determines the balance between recovery and primary balance. Recovery and primary balance march harmoniously; one never sacrificing another. Taxes must be measured by the real assets at the government sector. Consumption and net investment must be distinguished by sector.

(under *Statistical Evidence Recently Offered in Support of Ricardian Doctrine*, 63-66).

Q3-7 (pp. 64-65)   David and Scadding also examine household saving behavior and conclude that deficit spending will not absorb saving in the short or long run. However, their argument is quite different from the Ricardian equivalence theorem that inspired Kochin's **regressions**. Their point of departure is "Denison's Law," the observed long run constancy of the Gross Private Saving Rate (**GPSR**), the ratio of private saving, households and business combined, to GNP in the United States. Their explanation is "ultra-rationality"—households internalize the actions of the businesses they own, incorporated and unincorporated, and adjust their own saving to offset dollar changes in business saving. In short, they extend **the Modigliani-Miller theorem** beyond finance to accumulation.

A3-7:   Fiscal policy must be united in the real assets of the SNA and at a macro base. It is true that the M-M theorem is useful to enterprises at a micro base, where the duality of assumptions by company is required.

Q3-8 (p. 65)   Whatever the theoretical and empirical merits of this position—actually, GPSR appears to have slipped by one point since the second world war—it does not imply **public debt neutrality**.   Rather, it implies that a reduction of taxes (net of transfers) increases consumption dollar for dollar.   So "**ultra-rationality**" à la David and Scadding clearly implies not that personal saving adjusts to compensate for government deficits but precisely the opposite.

Distributed by this implication, which seems to imply that consumers internalize business behavior but not government actions, the authors propose a way out.   Their ultra-rational households, they decides, must regard taxes as financing collective consumption, perfectly equivalent to private consumption, and deficits as financing public investment, 100% substitutable for private capital formulation.   On this basis, they conclude that "an extra dollar of government deficit will displace a dollar of private *investment* expenditure" (my italics), a completely gratuitous conclusion unsupported by their empirical study of private saving behavior.   It is especially absurd to apply it to short run variations of deficit due either to automatic cyclical variation in revenues and transfers or to discretionary stabilization policies.

A3-8:   Fiscal policy is led to good and bad tools and devices.   The qualitative level is judged by the plausible number of assumptions.   Good and bad coexist, as seen in topology.   Bad is ultra-rationality, which is filled by irresponsible assumptions.

Q3-9 (p. 65)   These do not change the mix of government expenditure between consumption and investment; and no consumer-taxpayers, wherever they fall on the spectrum of rationality, would think they did.   Yet David and Scadding, and many who cite their article, evidently believe they have dealt a devastating blow to the use of fiscal policy as an instrument of stabilization.

A3-9:   Fiscal policy realizes practice=policy=causes=results, which is reliable and supported by people and society.

Section IV   Portfolio Choice and Asset Accumulation (pp.73-96)

(under *The Keynesian Short-run Model and Its Implication*, 74-84).

Q4-1 (pp. 74-75)   However, we know that **the IS/LM** solution cannot generally be a stationary equilibrium.   The values that the solution gives to the flow variables in the model usually imply that **stocks** are increasing or decreasing.   Thus net investment may be positive, so that the capital stock is increasing.   Saving may be positive, so that household net worth is increasing.   Yes, the government deficit may be positive, so that public debt, in some form monetary or

non-monetary, is increasing.   These stock changes mater because the stocks are, or should be, arguments in the functions determining the **flows**: For example, capital investment and production functions, which in the saving function.

As a result, of these internal dynamics **the IS/LM solution** is generally changing as time passes, even though no exogenous shocks are occurring.   The only stationary solutions, if any exist, those which imply stationary stocks--or the balanced growth equivalent, **shocks** all growing at a common proportional rate.

A4-1:   In the literature, the IS/LM are involved in supply and demand curves under the market principles vertically by goods and services.   While, in the *EES*, stocks and flows of all the parameters and variables are measured consistently by country, sector, year and over years.

Q4-2 (pp. 75-76)   However, the standard IS/LM model pays no particular attention to non-monetary public debt as such.   It amalgamates government securities with all other non-monetary assets as the undifferentiated second store of wealth to which "*the*" rate of interest applies.   Any per annum government deficit will alter this total quite slowly.   If this **aggregation** is accepted, then the relevant stock changes are those of money and of this second asset, which together sum to private wealth.   Growth of non-monetary public debt is just one form of growth in non-monetary wealth.   The relevant questions are what effects this growth has on consumption and on demand for money.   The same questions arise with respect to saving that finances private investment rather than government deficit. Keynes's pragmatic answer would still apply—flows change the stocks so slowly that **neglect of stock changes** does no violence.

A4-2:   In the literature, aggregation is one of indispensable problems under assumptions required partially and exogenously/externally.   While, the *EES* starts with no assumption and, maintains pure-endogenous.

Q4-3 (pp. 76-77)   **The IS/LM** solution (by following Mundell-Fleming extension) is governed by the foreign interest rate, exogenous to the home economy.   With a fixed exchange rate the IS curve determines domestic income and a trade balance not necessarily zero.   Consequently **the net foreign assets** of the economy, whether held privately or officially, are changing.   The model does not changes, which may build up to quite a large proportion of initial stocks in a short time. Under flexible rates too the equilibrium trade balance is in gene3ral non-zero; income is determined I the money equation, domestic absorption by income and the foreign interest rate, and their difference is **the trade balance**.

Both the exchange rate and the foreign asset flows, all on private account in this

regime, adjust to the trade balance thus balanced. The stock consequences of these flows are not modeled. However, the neat and powerful conclusions of the model regarding effectiveness of monetary and fiscal policies under the two exchange regimes do not survive explain tracking of foreign asset stocks.

A4-3: In the literature, partial endogenous and external factors march and co-exist in models. While, in the *EES*, once the trade balance is given, this balance is integrated with pure-endogenous. Everlasting consistency between stocks and flows are precisely measured, as typically proved in a unique axiom.

Q4-4 (p.77) A rigorous way to interpret Keynes's procedure and Hicks's formalization of the model is to regard the IS/LM solution as the values of the variables at a point in time. Then the model is a slice, in time of measure zero, of **a continuous-time** dynamic model. Asset stocks are among the state variables of the system; they are constant, i.e., independent of the situation, insofar as they are inherited from the past. They change as time passes, and their changes move the instantaneous IS and LM curves. The "short run" model has a new solution each micro-second, whether, where it settles down requires dynamic analysis.

Note to Tobin's Note 6 at the end of the above paragraph of Q4-4, with respect to **Tobin's q**[2]: An example of this type of model is: J. Tobin and W. Buiter, "Long Run Effects of Fiscal and Monetary Policy on Aggregate Demand," in J. L. Stein, ed., *Monetarism*, North-Holland, Amsterdam, 1976.

A4-4: In the literature, it is difficult to simultaneously manage the discrete time and continuous time since data are discrete and analyses are continuous. While, in the *EES*, based on the discrete time, both results, measured by discrete and continuous, are the same.

In the literature, it is difficult to estimate Tobin's q at a macro base. It is simple for the *EES* to measure an endogenous valuation ratio, macro by country and micro by company. The valuation ratio by country never repeats assets-bubbles if policy-makers intend to stop.

Q4-5 (pp.79-80) The monetary "point-in-time" interpretation of the Keynesian model and its IS/LM version, strictly adhered to, render meaningless any dynamic analysis of its own solution. If the solution isn't a durable **equilibrium**, it can't be the steady state of another dynamic system. It is the dynamic system, or rather the momentary stage of a dynamic process. So on this interpretation it doesn't make sense to regard the multiplier embedded in the model as an

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[2] The *EES* endogenously converts 'Tobin's q' (page 127, 1976) and measures the valuation ratio, $v^* = r/r - g_Y^* = V^*/K$, as a surrogate for the financial market based on macro-economy by country.

infinite-series process in time, or to apply Samuelson's **correspondence principle** to the Keynesian model, or to draw à la Hicks phase diagrams in IS/LM **space**.

A4-5: In the literature, time (between durable and dynamic equilibrium) is inevitably estimated separately of space (the IS/LM). In the *EES*, the two-dimensional plane hyperbola (2DPH) solves simultaneously time and space, so called beyond space and time. The 2DPH stays at the scientific world, as Samuelson has insisted on.

Q4-6 (p. 80)   Stability analysis of the IS/LM model, then, can be rationalized only by taking **an equilibrium** rather than a monetary view of the model's solution. But then, according to my previous argument, there is some inconsistency in taking Keynesian "**equilibrium**" as the **asymptotic** result of a long process of adjustment while ignoring the stock accumulations or decumulations that are bound to occur during the process.

A4-6: In the literature, there are a lot of equilibrium definitions under the market principles. The *EES* is supported by one definition of equilibrium, whose appearance is typically measured by the speed years for convergence and, primarily by using seven endogenous parameters in the discrete Cobb-Douglas production function. The endogenous equilibrium is connected each with reduced forms of endogenous equations and, maintains asymptotically in the 2DPH.

Q4-7 (p. 81)   However, the scenario implies an implausible degree of **fluidity in portfolios**. Every instant the allocation of the whole wealth of households is reconsidered. Given the final **vector of stocks**, the model implies, it does not matter by what time paths they reached their current values. Empirically, over the short run, at least, it seems that flows matter more than their proportion of stocks would indicate. There is likely some inertia in portfolio adjustment that is not captured by **the standard IS/LM model**.

A4-7: In the literature, macroeconomics is inevitably based on microeconomics, where supply and demand curves are commonly but differently. The standard IS/LM must have generosity to digest macro-requirements. Vector is simply applicable to microeconomics and, accounting principles enough reinforce the defects inherent in vector. The *EES* is pure-endogenously based on macro-requirements. It is not simple for enterprises to measure corresponding factors and elements since we must find micro assumptions as less as possible.

Q4-8 (p. 83)   Modeled in the this way, a discrete-time Keynesian IS/LM model can

account, at least qualitatively, for some phenomenon which the equilibrium or continuous-time versions either omit or consign to dynamic analysis. The discrete-time IS and LM curves, or their equivalent, encompass effects which in the continuous-time version can be displayed only by shifting the curves as stocks change and tracking the moving solutions. Of course, the discrete-time solution too is only a temporary state; the new stocks will generally lead to a different solution next period. As before, the only real equilibrium is **the stationary or steady balanced growth state**.

A4-8: In the literature, a stationary or steady equilibrium is expressed by a balanced growth rate. The equilibrium in the *EES* is statistically expressed by changing growth rate by fiscal year. Every parameter and every variable in the *EES* change by fiscal year yet, the essence of the endogenous-equilibrium remains unchanged, beyond space and time.

(under *A Framework for Macroeconomic Models of Assets Accumulation*, 84-96).

Tobin's equations (pp. 86-88, 1980) are, as a focus and summarily, involved in this section so that the author separately answers Tobin's equations at the end of this Q & A. Here exceptionally touches matrix, rows and columns, commonly used in accounting framework.

Q4-9 (p. 84)   The accounting framework is simple. Consider a "flow of funds" **matrix** of which rows (indexed by capital letters) represent assets (like currency, government bonds, equities, deposits), while columns (indexed by lower-case letters) represent sectors of the economy (like households, businesses, governments, banks, rest of the world).

A4-9: In the literature, vector holds with accounting vector while in mathematics, vector has a vector problem of AB ≠ BA. The *EES*, is free from vector, where no vector is required since cause=results holds everlastingly, beyond space and time.

Q4-10 (p. 87)   Suppose that we group all the world assets available to domestic sectors in one **row** (S=W; i.e., asset S=rest of world W), as would be appropriate if their foreign-currency prices and interest rates were all **exogenous** to the balance of payments equation, as shown below: (see E. 9, S≠W, below, no repeating).

A4-10: A system for national accounts (the SNA; 1993, 2008, 2010) is records-oriented. The *EES* is pure-endogenously polices-oriented. The KEWT takes its original data from *International Financial Statistics* (IFS) *Yearbook*, IMF, by fiscal year; 10 from the real assets and 15 from the financial/market externals. Statistics data are within a certain range of endogenous data.

PART 2

First half equations by James Tobin (1980, pp. 68-69)

Three parameters for modeling fiscal policy: the fraction of e of net national product purchased by government; the fraction of t collected in taxes net of transfers; the fraction γ of the government deficit financed by issue of base money. The remaining fraction $1 - \gamma$ is financed by issue of interest-bearing obligations, which for convenience I take to be consols bearing a coupon of \$1 per year, free of tax.

The real rate of return on money is $-i$, the negative of the inflation rate.

The real rate of bonds, market-determined, is r_B.

The market value of bonds is $1/(r_B + i)$, the reciprocal of their nominal rate of return.

The real interest cost of new debt (in both forms money and consolations) r_d is a weighted average of the two real rates, $r_B(1 - \gamma) + (-i)\gamma$. In a steady state, with γ constant over time, this is also the real interest cost of existing debt. If d is the ratio of total debt to national product, then the government budget identity can be written as:

$$(1) \quad e - t = (g - r_d)d = \big(g - r_B(1 - \gamma) + i_\gamma\big)d,$$

where g is the national growth rate of economy.

Wealth-owners also can hold capital bearing a real rate r_K. In steady stte equilibrium the aggregate capital/output ratio is inversely related to this ratio by $k(r_K)$. I write the steady-state demands for the three assets, relative to aggregate income, as functions $f^J(r_K(1 - t), r_B, -i, t), (J = K, B, M)$, i.e., as functions of the three after-tax rates of return and of the tax rate These must equal the steady-state asset supplies:

$$(2) \quad f^K(r_K(1 - t), r_B, -i, t) \quad = k(r_K).$$
$$(3) \quad f^B(r_K(1 - t), r_B, -i, t) \ = (1 - \gamma)\frac{e - t}{g - r_d}.$$
$$(4) \quad f^M(r_K(1 - t), r_B, -i, t) \quad = \gamma\frac{e - t}{g - r_d}.$$

The sum of these three equations gives the wealth/income ratio:

$$(5) \quad f(r_K(1 - t), r_B, -i, t) = k + d.$$

Equation (5) is the stock equivalent of the "IS" curve, which says that private savings equals capital investment plus the government deficit.

<u>Second half equations by James Tobin (1980, pp. 86-88)</u>

Here then is a generalized row, for assets S:

$$(6) \quad x_{Sh} = -x_{Sb} - x_{Sg} - x_{Sf} - x_{Sw},$$

where h, b, g, f, w refer respectively to households, business, government, financial intermediaries, and rest of world. Let I represent business net investment, D the government deficit, and B the current account balance. It is realistic and convenient to model business and government behavior as follows:

$$(7) \quad -x_{Sb} = \beta_S I + b_S, \ \Sigma_S b_S = 0, \ \Sigma_S \beta_S = 1, \ 0 \leqq \beta_S \leqq 1.$$

$$(8) \quad -x_{Sg} = \gamma_S D + g_S, \ \Sigma_S g_S = 0, \ \Sigma_S \gamma_S = 1, \ 0 \leqq \gamma_S \leqq 1.$$

The coefficient β_S is the proportions of investment financed by issuing various business securities. The coefficients γ_S are the proportions of the deficit the government finances by issues of its various liabilities, money and interest-bearing time obligations. The b_S represents refinancing of existing business liabilities and equity. Likewise, the g_S represent government exchanges of base money and debt instruments, and debt management operations replacing one kind or outstanding debt with another. Naturally these entries will be zero in many cells. Government does not enter the market for business equities, for example.

It is not so obviously appropriate to describe in this manner foreign assets to domestic wealth owners , or foreigners' sales of previously acquired obligations of the domestic sectors. It is not so natural to think of these transactions as geared to the rest-of-the-world's deficit B to the home country. But the model does need a balance-o-payments equation. Suppose that we group all the world assets available to domestic sectors in one row $(S = W)$, as would be appropriate if their foreign-currency prices and interest rates were all exogenous to the economy being modeled. Then the row for this asset is the balance of payments equation as follows:

$$(9) \quad x_{Wh} + x_{Wb} + x_{Wg} + x_{Wf} = B + \Sigma_{S \neq W} x_{Sw}.$$

In words, domestic asset-holders earn foreign assets by running a current account surplus, or acquire them when foreigners buy domestic assets in exchange.

Households are aiming for end-of-period stocks of value h^S in terms of consumption goods at prices of the period. These are functions $h^S(\cdot)$ of current-period variables—interest rates and expected asset yields, incomes, taxes—and of state variables determined before the period. The latter include households' beginning-of-period asset stocks S_{-1}^h. Part of their end-of-period stock demand is, of course, met by those initial stocks, valued at the asset prices (in consumption goods) of the period, q_S. The reminder of the h^S (conceivably negative) must be acquired by purchases (or sales) during this period. Specific household saving in asset S is:

$$(10) \qquad x_{Sh} = h^S(\cdot) - q_S S^h_{-1}.$$

Total household saving is accordingly:

$$(11) \qquad \sum_S x_{Sh} = \sum_S h^S(\cdot) - \sum_S q_S S^h_{-1}.$$

Portfolio choice and saving are simultaneous and integrated decisions. The same list of arguments appear in $(\cdot)$ in the specific asset demand functions in (10) and in overall wealth demand in (11).

Answers to the above eleven equations

Each equation has its problem under the market principle and demand and supply curve with absolute price levels. This comes from the restrictions and limit of the market principles, vertically by goods, services, and software. Besides, perfect competition is not always guaranteed in the world. Readers could explain the above restrictions and limit after reading Part 1. Also, readers could propose how to improve statistics data by country. We have bright future in this century, endowed with geographical topology in the actual /scientific world. The author thanks the accumulation of the literature and data.

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Note: The author of this book stayed at Kaldor's Kings College, Cambridge, in autumn/winter of 1996, dispatched by the University of Auckland as a PhD student.