

Two Supplemental Proofs such that the Real Rate of Profits/Returns Equals ever Zero, actually and endogenously, under the Money-Neutral

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Abstract

This paper aims at presenting and proving two fact-findings after “*Earth Endogenous System*” (15 May 2013; hereafter the *EES*). The high light is two mathematical proofs of E1 to E4 in section 3 and N_E1 to N_E4 in section 4. It implies no inconsistency between geometrical and mathematical. Two fact-findings are: (1) The real rate of profits/returns is zero, $RRR=0$, using hyperbola in the two dimensions. (2) Stop macro-inequality is in reality under perfect competition and immediately leads to effective increase in the wage rate. These two fact-findings are consistent with the author’s *money-neutrality* (*Int Adv Econ Res* 16: 282–296, 2010). This paper examines *money-neutral*, by using the ten year debt yield, money supply, and the exchange rate, by country; based on the KEWT database. Further, the two dimensions consistently match Iyonoishi’s five/six dimensional original discoveries beyond space and time.

Explanation and implication of (1): The real rate of return equal to zero, $RRR=0$, expresses that net investment qualified coefficient, β^* , reduces to zero at convergence and under the endogenous-equilibrium. This fact implies that the growth rate of nominal *GDP* equals the rate of inflation/deflation. Further once the rate of technological progress, $g_{A(FLOW)} = i(1 - \beta)$, is measured, as many as equations are measured solely using seven endogenous parameters. Seven endogenous parameters reduce the exogenous Phelps coefficient to the endogenous Phelps coefficient. As a result, the valuation ratio expresses the qualitative level of equilibrium. Further three parameters, the relative share of capital, the rate of change in population, and net investment qualified coefficient, β , respectively control the rate of return and the growth rate of output. These facts are simultaneously connected with (2).

Explanation and implication of (2): Stop macro-inequality in reality expresses that β^* is independent of national taste, preferences, and culture. β^* and national preferences are compatible and harmonized even in the global economies in the world. This fact implies that any country could enjoy national taste/preferences and increase consumption without decreasing the wage rate and with increasing employment.

The above facts are proved using the KEWT Short series 8.14 database, 1960/90 to 2010/12 by sector (Total, G, and PRI; the government and private sectors just before tax redistribution), where national disposable income, $Y = C + S = W + \Pi$, holds as better surrogate for *GDP*. This paper attaches two table series: One is for money-neutrality, $r_{(10\text{yrs DEBT})} / r^*$ and $e_{(US)} / e_{(US)}^*$, where $e_{(US)}^* = e_{(US)} + (r^* - r_{(US)}^*)$, holds and also for the speed years for convergence, $1 / \lambda^*$, and the valuation ratio, $v^* = r^* / (r^* - g_Y^*) = V^* / K^*$. Here $\lambda^* = (1 - \alpha)n_E + (1 - \delta_0)g_{A(FLOW)}^*$ holds yet reduces to $\lambda^* = (1 - \alpha)(n_E + g_{A(FLOW)}^*)$, on a time-point of transitional path, as shown by using recursive programming by year in the KEWT.

The KEWT Short 8.14, 1990–2012, differs from the KEWT Short 6.12/7.13, 1990/2010/11, that uses the rate of unemployment as the last means for the endogenous-equilibrium. The KEWT Short 8.14, 1990–2012, and 9.15, 1990–2013, contrarily, uses the rate of unemployment=zero or full-employment. Readers and researchers are able to compare the above differences by country, year and over years. The KEWT Short 8.14 and 9.15 respectively satisfy necessary and sufficient conditions for the endogenous-equilibrium perfectly without any exception among 86 countries. Nevertheless, there are much differences of qualitative level of purely endogenous in the speed years. For example, Norway and Canada are most sustainable and many emerging countries fluctuate rapidly and suddenly. This is mostly because deficit=zero is most effective and efficient wholly in the endogenous system. This is the deficit-neutrality. Many emerging countries suffer from stable sustainability. Their direct cause=result is such that the dynamic balance between the G and the PRI sectors is inclined to be either the G sector-oriented or the PRI sector-oriented. Tables, S-1 to S-5, clarify this cause at once, particularly in Table S-5.

A sister paper tests that marginal productivity of capital equals the rate of return and, marginal productivity of labor equals the wage rate, $MPK=r$ and $MPL=w$, when the relative price level matches the macro-absolute price level of the market principle; $p=P=1.000000$. This paper and the sister paper are wholly united consistently each other.

Acknowledgements

I dedicate 'new discovery of the real rate of return=0' in this paper to Dr. John M. Virgo, Founder of IAES since 1974. I am much thankful to his successor, Katharine. I am delighted to have this opportunity to convey their spirit to next generations at Philadelphia Conference on 10–13 Oct 2013.

I am sincerely grateful to Dr. Yisheng Huang, Editor, Better Advances Press, Toronto, for the publication of "*Earth Endogenous System: To Answer the Current Unsolved Economic Problems*," together with its staff's fine united cooperation. This paper is one of sister papers

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after book publication. Three sister papers each deepen key facts found in the above book and each prove new discoveries based on the key facts. Three sister papers find six new discoveries in the scientific world. Six discoveries are wholly interrelated yet, each paper contains two discoveries derived from respective aspect. Respective aspect or core are: (1) the author's neutrality of the financial/market assets to the real assets; (2) the author's two-dimension plain hyperbola that unites the scientific world with non-scientific world, consistently relying on Iyonoishi's discoveries up-dated at natural science of physics and element chemistry, nano and macro; (3) the author's neutrality of technology to national taste, preferences, and culture, by country. Three sister papers each aim at spinning unique cloth/methodology more rigorously. Three sister papers reinforce the woofs that bundle the warps designed for the market principle. I am strongly conscious of a fact that my work's 99.95 % has been produced by my teachers, researchers, and accumulated literature. Always I thank for the nature and also lucky bliss.

Rise questions and answers to key cores

One purpose of this paper is to extend the author's overwhelming *money neutrality* of the financial/market assets to the real assets and to reinforce the last paper (*Int Adv Econ Res* 16: 282–296, 2010), from an essential standpoint of the author's "*Earth Endogenous System: To Answer the Current Unsolved Economic Problems*" (lxvii+568, May 15, 2013). The author here casts a question: Does the Japanese economy recover by the rapid increase in *monetary base* so as to be comparable to the current level of the FRB at the end of April? Financial policy of the Bank of Japan (BOP) now changes dramatically from steady to radical. International economists currently support Japan's political efforts to challenge for 'inflation target and getting out of deflation.' Nevertheless they claim two common conditions; 1) domestically within a country and 2) under no intervention to the exchange-rate market. This paper clarifies the whole essentials and mechanically proves the limit of financial policy, by using the KEWT database, 1960/90–2010/11, for 86 countries by country and empirically extending the author's *money neutrality* over ten year debt yield, money supply, and the exchange rate.

The equation of 'the nominal interest rate = the real interest rate + the inflation rate' holds under the price-equilibrium or the market principles, since Irving, F. (1906, 1930) first formulated. The author earlier affirmed this equation, as it holds if and only if the inflation rate is externally given. When this equation is expressed purely endogenously (with no assumption and no externality), the real interest rate turns to the real rate of return, which is always zero, theoretically and empirically. Here we need to distinguish 'real' of the real interest rate

with 'real' of the real assets. The *EES* discovered that actual/statistics data exist always within a certain range of endogenous data, by country, sector, and year and over years and that the endogenous-equilibrium never contradicts the market principles and even reinforces the market principles. Then, the real interest rate must be zero even in all the exogenous/external models. It implies that the nominal interest rate equals the inflation rate, regardless of the character of the equation, endogenous and exogenous. The literature actually perceives that the real interest rate is close to zero but, with no proof yet.

For the interest rate and rate of return analyses, this paper endogenously compares the total economy with the government (G) sector, where the movements of the private (PRI) sector are close to those of the total economy. For empirical inspection, the author here compares the rate of return, the inflation rate, and the real rate of return, with ten year debt yield *International Financial Statistics Yearbook*, IMF, presents by year. Resultant discoveries by sector, just before redistribution of disposable national income, are: (1) The real rate of return is completely zero, where the inflation rate equals the nominal rate of return. Even if the endogenous-equilibrium becomes far from moderation, the real rate of return is extremely close to zero. (2) The more negative the debt, the more negative the real rate of return at the G sector is, where the inflation rate and the nominal rate of return move much more vividly and boldly than those at the total economy. Even if the endogenous-equilibrium is far from its moderation, the real rate of return at the G sector is close to zero similarly to that of the total economy. As a result, (3) market rates match endogenous rates and strictly prove the author's *money neutrality*. Several Near-East countries have not the markets due to their culture, the above (1) and (2) surprisingly hold under no market. It implies that the markets and no market solely confirm new discoveries.

The author rises following topics behind the first question. Firstly, it is a severe fact that 'actual = statistics = market principles' are inseparably united by bundling vertical goods and services, by country and under the price-equilibrium. One affirms this fact but cannot prove the theoretical foundation wholly as a universal system. Secondly, several questions speak for this fact: a) Why has Japan fallen into long negative growth rates of *GDP* over years since assets- bubbles burst in 1990? b) Does the current radical BOJ financial policy function towards economic growth? c) Does the current radical BOJ know indispensable limit of the central bank's financial policy? d) Why do all the fiscal, financial, and market policies never produce better results for the last twenty years or more? e) Does Japan fall into default soon after having a high level of interest rate caused by unstable balance of payments under weaker exchange rate? And lastly, f) what are real assets-differences between Japan and the US while under similar level of 'monetary base'?

Essential difference between the price-equilibrium and the endogenous-equilibrium is

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traced back to two 'real' concepts of (1) 'real' prevailing under the market principles and (2) 'real' of an endogenous rate of return based on the real assets. Under the market principles, interest rates are externally given by 'real rate=nominal rate – inflation rate,' as clarified by Fisher, I. (ibid.). Endogenously, the inflation/deflation rate is measured as the horizontal asymptote of the rate of return function to net investment/net disposable national income, by sector (the G and PRI sectors and, the total economy as totally aggregated) and, under perfect competition measured in the endogenous system. As a result, the lowest limit of interest rate is zero. Paul Krugman (1998, 2008, and opinions of New York Times; the same, even June 2013), contrarily stresses that parachute money-supply lowers the real interest rate and anticipates that close-to-zero real interest rate shall stimulate actual net investment. Endogenously, however, the rate of return at the G sector falls into a severe native range due to huge deficit by year, which causes crowding-out at the PRI sector. It implies that fiscal and financial policies have no power to growth recovery and that parachuted money-supply hopefully raises animal spirit or surprisingly extends 'expectations' effect.

This paper, first in the literature, proves 'the real rate of return=0.' It implies the nominal rate solely corresponds with the inflation, externally, exogenously, and endogenously. Further, this paper solves empirically how to avoid assets-bubbles using the valuation ratio, related to the endogenous Phelps coefficient. *Money neutrality* maintains its everlasting yet, its qualitative results differ by country. Qualitatively, the differences are reflected on the sustainability or robustness of the real assets. For example, the US real assets are much more robust than those in Japan. The differences are decisive. A fundamental reason is the accumulation of deficits and debts over years in Japan since 1991 when government saving turned negative. The difference of the nominal rate of return and the ten year debt yield typically shows the evidence that Japan has taken wrong policies for the last twenty years or more. Theoretical essence was earlier explained by Samuelson (1942, 1976, with Salant, W. S.), and as proved in related chapters of the *EES*. Answers to the current unsolved economic problems are typically expressed and solved in this paper, just like the sub-title of the book.

JEL Code: E44; E31; E43

1. Introduction

This paper revisits purely endogenous system with no assumption, from the standpoint of before and after the publication of "*Earth Endogenous System*," lxxviii+568, 15 May 2013, published by Better Advances Press, Toronto (the *EES*,

hereunder). Processes and conclusions before and after remain the same. This paper intends to express the same contents more understandably without using equations except for related equations for proving the author's new discovery after publication.

This paper steps into the non-scientific world. The results are always the same since the negative and positive occur, solely caused by individual's different side. This paper extends the author's two-dimension plain hyperbola as the essence of the *EES*. The extension is inherently supported by Iyonoishi's (46 page booklet, 17 May 2013) published after her "*Solve True Universe and Real Earth in Japanese.*" The author, in a separate sister paper, sums up her new discovery cores yet, focuses geometry, topology, and philosophy that match the author's extension in this paper. The author shows each paper's purpose and essence lying between two sister papers (see BOS C-1).

This paper shows first the proof of the real rate of profits/returns = 0. Second, shows the relationship between the growth rate of disposable national income and the real rate of profits/returns = 0. Third, shows empirical inspection results of the author's *money neutrality*. These three are interrelated and united harmoniously by country, despite of different preferences, culture, history, and technology by country. The *EES* reinforces the woof of a cloth (recipient) of policy-oriented methodology, where the warp is fully supported by the market principle under the price-equilibrium. This paper further strengthens the woof, inherently supported by Iyonoishi new discoveries. Two-dimension hyperbola of the *EES* perfectly matches her whole versions. Statistics data are always within a certain range of endogenous data. Positive and negative are always co-exist. Even David Hume's (1752) *money neutrality* is interpreted correctly and accurately.

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Two sister papers cover each other for the whole world on 28 June 2013

WEAI Biennial, Keio, 16March 2013	iaes Conference, Philadelphia, 10-13 Oct 2013
W1. $p=1.0000000$ & three sorts of sigma.	il. Proof of the real rate of profits/returns=0.
By converting exogenous Sato's (1980) conservation laws, to endogenous laws using a fixed capital-output ratio.	With the growth rate of output, statistically & endogenously. From exogenous to endogenous Phelps (1961) coefficient.
W2. Cores of Iyonoishi (17 May 2013) new discoveries. Focusing on topological two-dimension plain hyperbola. Backing and matching "Earth Endogenous Sysytem"(2013).	Examining the vluation ratio and the speed years by country. to extinguish window-dressing of SNA & assets bubbles.
W3. Phillips curve and full-employment under no inflation. Here, il and i2 reinforce W3 (see the RHS).	i2. Empirical supplement of the neutrality of financial/market assets to the real assets (Int Adv Econ Res (2010) 16). Comparing ten year debt yield, money supply, and the exchange rate, comparing with the US\$ and Euro.
For interegrating W1 and W3, W2 is essentially required.	il is connected with i2 inseparably (with W3, the LHS).

2. Independency between national taste & consumption and technological progress, stopping macro-equality

Preliminarily the author touches the relationship between preferences and technology. The relationship expresses one of key cores of the *EES* so that readers may easily enter into the mechanics of the rate of return and the Phelps coefficient that follow soon later. National taste and technological progress march together independently. It implies that consumers' goods and producer's goods are produced independently and integrated into one sector model and system. This system differs from two-sector models in the literature. What is the difference?

First of all, there are apparent differences between technological progress and Phelps, Edmund, S. (1961, 1965) golden rule. All the models of the literature estimate partially endogenous rates of technological progress and under the market principles. The *EES* measures a unique endogenous rate of technological progress by converting Solow's (1956) exogenous to endogenous based on a discrete Cobb-Douglas production function. Critical differences between demand and supply at the macro-economic reflect endogenous results. The market principles cannot disclose causes wholly, while the *EES* clarifies causes=results simultaneously. Fundamental cause is the accumulation of deficit over years. The rate of techno-

logical progress is the product of the net investment to disposable national income Y and the net investment qualitative coefficient $(1-\beta^*)$. And, both elements are measured by sector, just before tax redistribution.

As a result, Phelps golden rule is converted to endogenous from exogenous under the market principles. Under the exogenous golden rule, the growth rate of GDP and the market rate of interest as a resultant rate of profits to capital are compared. Nominal=real +inflation/deflation prevails. Contrarily under the endogenous golden rule, the growth rate of Y is measured using the rate of technological progress. The rate of return is measured using the capital-output ratio and the relative share of capital. These parameters and variables are always consistent by country, sector, and years, and over years as a whole system. However, the rate of return=0 surprisingly extends exogenous and endogenous Phelps coefficients, as will be discussed below in detail.

BOX C-2 Preferences versus technology

	Preferences	endogenously integrated with	Technology	as the best aspect to $\Omega=K/Y$
	rho/r		$\frac{g^*_{AFLOW}}{g^*_{TFPSTOCK}}$	
parameters fixed	i and n	constant over years		the relative share of capital, α , fixed
		the ratio of investemnt to output		*: at convergence in the transitional path
		the rate of change in population		varying over years
the price-equilibrium \Leftrightarrow	the endogenous-equilibrium			the rate of return, $r=\alpha/\Omega$
	Ω and k	varying over years		qualitative investment coefficient, β^* or $1-\beta^*$
		the capital-output ratio		diminishing rate of return coefficient, δ_0
		the capital-labor ratio		endogenous speed years, $1/\lambda^*$, yrs
				coefficient, x, between r and growth rates,
	in the transitional path over years, using recursive programming			per capita output and output, g^*_y, g^*_Y
	Constancy of the capital-output ratio, Ω , Samuelson 1970			endogenous valuation ratio, $v^*=V^*/K$
	Sato' (1981) Conservatin Laws to $\Omega=\Omega^*=\Omega_0$			endogenous cost of capital, $r-g^*_y$

3. Rate of return after excluding inflation/deflation is zero, consistently with Iyonoishi's new discoveries

First let the author show new fact proved in this paper. New fact: the rate of return at the convergence point of time is zero. The author shows two proofs: One

proof; inherently supported by Iyonoishi' (ibid.) new discoveries, as stated in the sister paper and the other proof; as an extension of the *EES*. One proof; at the cross point of the horizontal asymptote and the hyperbola curve on the two-dimension plain hyperbola.

The other proof holds on the author's two-dimension plain hyperbola, where four stationary quadrants are shown as static results after four quadrants rotated spirally (on Iyonoishi' proof). Suppose: The x axis shows the ratio of net investment to national disposable income after depreciation (capital consumption) and the y axis shows the rate of return. The horizontal asymptote expresses the rate of endogenous inflation/deflation and the hyperbolic curve expresses the rate of return function to the net investment to endogenous national disposable income. These two ratios imply that maximum returns are realized at the minimum net investment: The closer to the vertical asymptote the hyperbolic curve the higher the rate of return to net investment. This phenomenon belongs to the extension of the *EES*.

Extended phenomenon is another expression of maximum returns/profits accepted in the literature under the market principles. Enterprises after tax redistribution are its objective. Maximum profits are shown by parabola, but parabola does not need an origin of four quadrants and enjoys free space. The literature sticks to the parabola, instead of hyperbola that requires four quadrants.

Nevertheless, the whole world proved by Iyonoishi (ibid.) overlaps the two-dimension plain hyperbola. Two 'e' electron neutrinos exist on the origin of the x axis but one 'e' is hidden. One hidden electron 'e' on the x axis connects the two-dimension plain hyperbola (in the real, scientific world) with the spiritual (non-scientific) world and integrates both worlds. Iyonoishi calls it 'Super Universe Integration Theory (SUIT),' where three dimensions spirally prevail anywhere.

In short, the author here confirms that Iyonishi new discoveries based on the SUIT connected the two-dimension plain hyperbola with zero- rate of return per-

fectly.

Next, the author proves the extended phenomenon after the *EES* using endogenous equations. This proof is a highlight of this paper and even clarifies that any equation in the *EES* is always consistent with numerous (thousands) equations conceivable as many as possible. Prove that the rate of return reduces to zero. This is proved starting with the inverse of the speed years for convergence, $\lambda^* = (1-\alpha)n + (1-\delta_0)g_A^*$. At the convergence point of time, the relative share of capital, α , equals the diminishing returns to capital (DRC) coefficient, δ_0 . Then, $\lambda^* = (1-\alpha)n + (1-\delta_0)g_A^*$ reduces to $\lambda^* = (1-\alpha)(n+g_A^*)$. This equation matches Robert Barro and Sala-i-Martin's (1995), except for the difference between endogenous and exogenous at the rate of technological progress.

The *EES* theoretically and empirically proves $r^* = (\alpha / (i \cdot \beta^*)) g_Y^*$, where the endogenous Phelps coefficient x is $\frac{\alpha}{i \cdot \beta^*}$. This coefficient, $x \equiv \frac{r^*}{g_Y^*}$, is obtained by using $\alpha = \Omega \cdot r^*$ or $r^* = \frac{\alpha}{\Omega}$ and accordingly, $x = \alpha / (i \cdot \beta^*)$. The growth rate of disposable national income per capita is shown by $g_y^* = i(1-\beta^*) / (1-\alpha)$. Accordingly, the growth rate of output is shown by $g_Y^* = g_y^*(1+n) + n$.

As an extension of Chapter 8 in the *EES*, the following E1 to E4 hold each as reduced form.

$$\text{E1. } \beta^* = \frac{\Omega(1-\beta^*)}{(1-\alpha)} \text{ or } \Omega = \frac{\beta^*(1-\alpha)}{(1-\beta^*)} . \text{ Or, } \beta^*(1-\alpha) = \Omega(1-\beta^*) .$$

$$\text{E2. } \beta^* = \frac{\Omega \cdot i}{i(1-\alpha) + \Omega \cdot i} \text{ holds under population } L=\text{const. and accordingly, } n=0 \text{ in}$$

$$\beta^* = \frac{\Omega^*(n(1-\alpha) + i(1+n))}{i(1-\alpha) + \Omega^* \cdot (1+n)} . \text{ Thus E2 becomes reduced form.}$$

$$\text{E3. Inserting the capital-output ratio of E1 into E2, } \beta^* = \frac{\frac{\beta^*(1-\alpha)}{(1-\beta^*)} \cdot i}{i(1-\alpha) + \frac{\beta^*(1-\alpha)}{(1-\beta^*)} \cdot i} .$$

E4. The LHS of E3 is β^* while the RHS of E3 is $\frac{\beta^*}{(1-\beta^*)+\beta^*} = 1.0000$.

As a result, $\beta^* = 1.0000$ or $(1-\beta^*) = 0$.

The above four equations imply no growth due to $(1-\beta^*) = 0$ and $g_A^* = i(1-\beta^*) = 0$, when population $L = \text{const.}$ and accordingly, $n = 0$. The *EES* shows the above results as a conclusion, yet without the above processes. These four equations further imply that discrete endogenous reductions equal the results of partial derivative using the continuous case.¹⁾ The same results exist between discrete and continuous.

4. From exogenous to endogenous 'Phelps' golden rule, cooperating and reinforcing the market principles

This section briefly sums up the conclusion so as to prove various connections consistently. Phelps (ibid.) golden rule determines the relationship between the rate of return and the growth rate, based on the market principles and accordingly, under the price-equilibrium. In the case of exogenous, the rate of technological progress is given and the rate of return is determined at the financial market. In the case of endogenous, the rate of technological progress is first of all determined by $g_A^* = i(1-\beta^*)$. Accordingly, followed by the rate of return, and the growth rate of national disposable income Y, g_Y^* .

Inherently supported by Iyonoishi new discoveries, the rate of return is zero, perfectly shown as above. Also the rate of return is zero as the extension of the

1) Tinny differences between discrete and continuous: The continuous case has one answer while the discrete case several answers at least. Purely endogenous equation is able to extend as many equations as possible so that tinny difference such as 1.0000000000 versus 1.0000000500 is calculated (in detail, see the differences between 'three sorts of sigma' related to Sato (1981) in the sister paper of this paper).

EES (see E1 to E4 above). Then, the nominal rate of inflation corresponds with the nominal rate of growth.²⁾ The relative share of capital $\alpha = \Pi / Y$ is determined by $\alpha = \Omega_0 \cdot r_0$, where the capital-output ratio is $\Omega = \Omega^* = \Omega_0$ of endogenous Sato conservation law and, the rate of return is $r = r^* = r_0$, similarly to $r = r^* = r_0$.

As a result, the Phelps coefficient x reduces to $x = i \cdot \beta^* / \Omega$. The author accurately proves the Phelps coefficient, $x = i \cdot \beta^* / \Omega$, here as follows:

$$N_{E1}. \quad r^* = \frac{\alpha}{\Omega}.$$

$$N_{E2}. \quad g_Y^* = \frac{i(1-\beta^*)}{1-\alpha}(1+n) + n.$$

$$N_{E3}. \quad \text{Since population } L \text{ is constant and } n=0, \quad g_Y^* = \frac{i(1-\beta^*)}{1-\alpha}, \quad \Omega = \frac{\beta^*(1-\alpha)}{(1-\beta^*)}.$$

$$N_{E4}. \quad \text{As a result, } \frac{r^*}{g_Y^*} \text{ reduces to } \frac{\alpha}{i \cdot \beta^*} \text{ (in detail, see E1 to E4 above).}$$

The diminishing returns to capital (DRC) coefficient δ_0 is determined by

$$B^* = (1-\beta^*)/\beta^* \text{ and } \Omega = \Omega^* = \Omega_0; \quad \delta_0 = 1 + \frac{LN(\Omega^*)}{LN(B^*)}. \text{ Thus, } g_Y^* \text{ is determined}$$

by the ratio of net investment to net national disposable income Y , $i = I / Y$, and the author's diminishing returns to capital (DRC) coefficient δ_0 ; independently of $r = r^* = r_0 = 0$. It implies that the endogenous Phelps coefficient holds inherently supported by Iyonoishi (ibid.) new discoveries. New discovery of $r = r^* = r_0 = 0$ at the *EES* perfectly matches Iyonoishi new discoveries. Note that $i = I / Y$ is related to the balance of payments to Y , $bop = BOP / Y = s - i$,³⁾ where saving is

2) Consistency of the rate of inflation/deflation before and after new discoveries: Before, $r^* - HA_{r^*(i)}$ and after, $HA_{r^*(i)}$, by one new discovery of $r = r^* \rightarrow 0$.

3) The above Y is composed of the real assets. Therefore Y is endogenously connected with the balance of payments $BOP = S - I$ and deficit $\Delta D = S_G - I_G$ by country, where \nearrow

shown by $s = S/Y$. In short, g_Y^* is determined by net investment and the rate of technological progress.

Supplement to the market principles: Under the market principles, the rate of return is replaced by the rate of interest externally in the financial market. The rate of inflation is similarly by Consumers Price Index (*CPI*) externally. Irving Fisher's (ibid.) equation, 'nominal = real + inflation/deflation' holds anywhere beyond space and time. Data obtained at the markets are always external and its causes are not given. As a result, any model in the literature is composed of endogenous and exogenous or external and with assumptions as surrogate for equations.

Then, what is the condition for the exogenous Phelps coefficient to holds in the literature? The condition is simple. The above general form, $x = i \cdot \beta^* / \Omega$, answers at once. Set $x = 1.0$ in order to maintain $r = g_Y^*$. The answer is $\Omega = i \cdot \beta^*$. Phelps (ibid.) golden rule in the literature holds under $\Omega = i \cdot \beta^*$, even if the rate of technological progress is given externally.

5. Money neutrality of the financial/market assets to the real assets and its qualitative level using externals of 10 year debt yield, money supply, and the exchange rate by country

First, the author sums up the stream of the author's *money neutrality*, inherently supported by Iyonoishi's (ibid.) new discoveries just after the publication of the *EES*. Second, the author historically and empirically describes the stream of neu-

the PRI sector is expressed by $(S_{PRI} - I_{PRI}) = (S - I) - (S_G - I_G)$. Suppose that the G sector is zero. In this case $(S_{PRI} - I_{PRI}) = (S - I)$ holds. Suppose that deficit is based on cash flows. Real-assets deficit exceptionally equals estimated deficit that uses cash flow-in and -out only when deficit is zero. Why is it so? This question is connected with several fundamental defects macroeconomics has not conquered.

trality. The author first addresses the neutrality in *Int. Adv. Econ. Res.* 2010 16: 282–296. This stream has never changed before and after publication of the *EES* (15 May 2013). The author finds one new discovery, technology-neutrality in a separate sister paper so that *money neutrality* is used in this paper (for simplicity, hereunder, neutrality).

First, extends the author's neutrality, inherently supported by Iyonoishi's new discoveries: (1) The real world has the true world at the center of the real world. (2) The real world seemingly expresses inverse results but these inverse results solely occur by the difference of an individual stance. The whole world always expresses the same results. For example: (1) Actual statistics data are always within a certain range of endogenous data since endogenous data are true and theoretical. (2) In the case of the North Hemisphere, a typhoon rotates from left to right while in the case of South Hemisphere, a typhoon rotates from right to left.

The author's neutrality of the financial/market assets to the real assets prevails anywhere beyond space and time; the real world, the true world, and the whole world that integrates both real and true worlds. The real world is scientific as in the literature. The real assets of the *EES* stay at the scientific world (for its strictness, see BOX 1–3 in Chapter 1). The real assets use money as numerical numbers, i.e., money by country with the exchange rate. It implies that money is most easy unit to examine hypotheses among all the measures/units natural and social sciences use broadly.

Second, historical stream of the neutrality: The scientific world has two ways naturally, neutrality-acceptance and neutrality-denial. The scientific world changes and never repeats the same causes and effects, where dynamic balances are required. Nevertheless, economists look for roles or rules as hypnoses. Why is it possible? This is because the scientific world has the non-scientific world at its center, where 'center' is delicate something expressed by more than one word, since the whole world integrates the scientific with non-scientific worlds, spirally

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beyond space and time. As a result, for example, the real assets-based business cycle theory reflects true cycle more easily than other biased business cycle theories.

Historically, David Hume (Of Money, 1752) affirmatively steps into money neutrality. Technically, short-sighted money may be distinguished with long-sighted money. Spiritually, money itself is perfectly neutral to the real assets. David Hume (ibid.) is immediately connected with Iyonoishi's (ibid.) whole world that integrates the real and true worlds. Positive and negative always coexist and finally be integrated. The true world advocates positive neutrality, which locates at the above center of the real world. Both worlds are compatible and integrated cooperatively.

N. Gregory Mankiw (26, Harvard University, May 2006) publishes 'The Macroeconomist as Scientist and Engineer,' on behalf of David Hume and compares Keynes Revolution with the Neoclassicists. N. Gregory Mankiw (ibid.) advocates two ways, engineer's and scientist's. His two ways stay at the real world. Iyonoishi thinks: Fibonacci number completes on $99+1=100$. The last 1 is expressed as Nature or God. It is difficult for the current researchers to trace the source for the efforts of 99% and the inspiration of 1%. 1% must be what nature/God initiated to human. Here the author stresses that the market principle functions similarly to Iyonoishi's (ibid) 'consciousness' prevailing at scientific and non-scientific worlds.

Lastly, let the author empirically examine the neutrality by using the ten year debt yield, money supply, and the exchange rate, by country, available in the KEWT databases for 65 countries and three area averages, 1960–1990 to 2010/2011.

For the financial/market assets, the *EES* has analyzed (1) money-neutral indicators or three sorts of money supply *M2* to capital and output, where each inverse is the multiplier, (2) the difference between ten years debt yield and related endog-

enous rates/ratios, and (3) a unique exchange rate-neutral indicator that clarifies that the exchange rate is completely neutral to the clue of the real assets. **Tables 1 to 6** shows two tests, $r_{M(10yrs)} / r^*$ and $e_{(US)} / e_{(US)}^*$, where $e_{(US)}^* = e_{(US)} + (r^* - r_{(US)}^*)$,⁴⁾ for 65 countries and three area averages. The exchange rate is surprisingly neutral to the real assets at almost all the countries. Anyone cannot control the exchange rate by country. The market principles are vertically alive forever. The ten years debt yield differs, wholly depending on the level of debt. The Phelps coefficient or its golden rule prevails by country. Yet, the Phelps coefficient reflects the qualitative level of the endogenous-equilibrium. As a result, the rate of return suddenly fluctuates and (often soon) recovers balances.

6. Endogenous equilibrium behind *money neutrality*, with its test

The *EES* has endogenous consistency among values and ratios in its whole system. This consistency is extended to all the values and ratios made of the statistical data. The above neutrality test is indispensably extended to the endogenous equilibrium test using two ratios, the speed years for convergence, speed = $1 / \lambda^*$, and the valuation ratio, $v^* = r^* / (r^* - g_y^*)$. These two ratios express equilibrium inherently. And that both the scientific world and the non-scientific world accept generally. This fact is backed up by Iyonoishi (ibid.).

The two ratios are tested here using **Tables 7 to 12**. The character of the valuation ratio is similar to that of the exchange rate by country. It implies that the

4) The exchange rate-neutral indicators are composed of the following five, as shown in Notations of the *EES*:

F3-1. the exchange rate to the US (item 'ae', in IFSY, IMF) divided by the relative growth rate of per capita output, $e_{(US)} / g_y^{**}$, where $g_y^{**} = g_y^* / g_{y(US)}^*$.

F3-2. $r_{DEBT} - r^*$.

F3-3. $e_{(US)}^* = e_{(US)} + (r^* - r_{(US)}^*)$.

F3-4. $e_{(US)} / e_{(US)}^* = e_{(US)} / (e_{(US)} + (r^* - r_{(US)}^*))$.

F3-5. $e_{(US)} / y^{**}$, where $y^{**} = y^* / y_{(US)}^*$.

valuation ratio is tightly related to the exchange rate and the market. No one controls the exchange continuously. The valuation ratio reflects the real assets severely. Readers will understand the circumstances as an extension of the Phelps coefficient. When the three parameters of α , $i = I / Y$, and β^* of the Phelps coefficient are modest, the market expresses its judge more favorably.

The character of the speed years for convergence differs, similarly to ten year debt yield to the real rate of return, $r_{M(10\text{yrs})} / r^*$. It implies that the rate of return, exogenously and endogenously, is deeply involved in the essentials of the real assets. The speed years are: Not only a direct measure of the endogenous equilibrium but also a whole typical indicator of the real assets. Suppose: The speed years fluctuate sharply. This shock is required for the recovery of unstable equilibrium. After the shock, the speed years usually become stable and modest. If it is not, some fundamental causes exist such as huge debt and extreme unbalances between the real assets.

7. Conclusions

The whole world completes theoretically and empirically by uniting two sets of discoveries; (Set 1) Iyonoishi's new discoveries and (Set 2) the author's two-dimension plain hyperbola. (Set 1) universally presents fundamental new discoveries in the whole world composed of the scientific and non-scientific worlds. (Set 2) The author's, she states, silver ratio ($1:1.41421356, \sqrt{2}$). The key of (Set 1) is Pythagoras' $x^2 + y^2 = z^2$. As a result, the golden ratio and silver ratio, oval and circle, two different right triangles are well spirally united. Up to date, Iyonoishi has advocated that new equations such as $x^n + y^n = z^n$, where $n \geq 3$ are not required for Iyonoishi's (ibid.) new discoveries. Iyonoishi will cite one set of equations formulated by Sano Chiharu (Theorem 1, 4p. and Theorem 2, 2p. of 17 page booklet; Russian Academy of Sciences) as a starting point when she completes her structural stage. Simultaneously, this paper proves the real rate of

return=0, as an extension of the *EES* and also instantly backed by Iyonoishi (ibid.) since two-dimension plain hyperbola shows the result after spiral rotation for four quadrants.

Let the author conclude the implication of the real rate of return=0 under the neutrality. International competition for higher *GDP* and accordingly, endless inequality at macro level (except for social policies) will lose color. *GDP* growth rate equals the rate of inflation. People by country become friendly and stable under the real rate of return=0. Policy-makers easily deepen country's own culture and history and, people are happy free from meaningless competitions. Human will come back, nearer to the Nature. No assets-bubbles are expected when three parameters of the Phelps coefficient, $x = i \cdot \beta^* / \Omega$, are balanced and controlled in the scientific world. It is not required for economists to establish new qualitative indicators over *GDP*. The whole world harmonizes the scientific and non-scientific worlds mildly.

Let us take into account the existence of sustainable society by country, first from social science viewpoint and second, economic science. Conclusively, both are wholly united but just for discussions. A common target is *continuous* sustainability by year and over years. First, from social science viewpoint, suppose there exist suitable equations with various assumptions. Then, there will no solution to solve problems by researchers, because the current society becomes complicated and moving instantly much more than the last century. There seems to be no way how to unit various taste, preferences, culture, and history. Second, from economic science viewpoint, suppose there exist money and money is homogenous one degree. Even if the Cobb-Douglas production function is used, there might be no way how to unit economic society, whose decision makers are human, greedy and full of desire for money, honor, and property. Economics and econo-

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metrics each progress surprisingly month by month under severe researcher s' competitions. This is reality, indeed. No one can deny this fact.

Nevertheless, suppose that money is a unique existence in that its $\text{quality}=\text{quantity}=1.0000000$ or, the $\text{relative price}=\text{absolute price}=1.0000000$, where the $\text{rate of substitution}=1.0000000$ under perfect competition. It implies; economic society holds with the real assets, regardless of the volume of financial/market assets and externals. This is a Utopia economy, where full-employment under no inflation/deflation is in reality, as proved in the *EES* and the KEWT databases, by sector. A Utopia economy has simultaneously characters such that reproducibility/duplicability, results=causes, geometrical=mathematical, and analogy in four quadrants in the two dimensions, regardless of linear and non-linear. A Utopia society realizes, because actual statistics data are always within a certain range of endogenous data in the KEWT databases, as evidenced repeatedly hitherto. Really we are fortunate in that money gas such characteristics for human decision making, under the market principle (single use).

Hyperbola functions spring up moderation philosophy, theory and practice with the negative and positive principle and the profit maximum principle with minimum net investment. Instantly, dynamic balances hold, negative and positive. Repeating, technological progress is independent of preferences and population. We are already composed and happy thinking of others. There is no fighting but united body and mind each other, regardless of individuals, systems, organic and non-organic.

Let us dream towards diversified culture and civilization with people's spiritual happiness and towards give-first and back-last; by country. Dream realizes peacefully soon in the 21st century.

List of tables, based on KEWT Short series 8.14, 1990–2012, whose original date from *IFS*, IMF:

Tables 1 to 12 Money neutrality test using 10yrs debt yield and the exchange rate by country

Names of countries and area weighted averages by table/page

T1-1	17 Asia AV	Euro area	15 Europe AV	Argentina
T1-2	New Zealand	Austria	Denmark	Bolivia
T1-3	Mexico	Belgium	Iceland	Brazil
T2-1	Australia	Finland	Norway	Chile
T2-2	New Zealand	France	Sweden	Colombia
T2-3	Mexico	Germany	Switzerland	Paraguay
T3-1	Bangladesh	Greece	the UK	Peru
T3-2	China	Ireland	Bulgaria	Iran
T3-3	India	Italy	Czech Rep	Kazakhstan
T4-1	Indonesia	Luxemburg	Hungary	Kuwait
T4-2	Japan	Netherland	Latvia	Pakistan
T4-3	Korea	Portugal	Poland	Saudi Arabi
T5-1	Malaysia	Slovak	Romania	Algeria
T5-2	Philippines	Slovenia	Russia	Egypt
T5-3	Singapore	Spain	Turkey	Kenya
T6-1	Sri Lanka	Taiwan	Ukraine	Morocco
T6-2	Thailand	Vietnam	South Afric	Nigeria

The above is shown by six tables/pages for two tests for money-neutrality, $r_{(10yrs\ DEBT)} / r^*$ and $e_{(US)} / e_{(US)}^*$, where $e_{(US)}^* = e_{(US)} + (r^* - r_{(US)}^*)$ is defined. The same table is also used for the speed years, $1/\lambda^*$, and the valuation ratio, $v^* = r^* / (r^* - g_Y^*) = V^* / K^*$.

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Tables S-1 to S-5 for the speed years by sector (Total, Government, and Private
 sectors)

The speed years for convergence by country and sector, T, G, and PRI						
G seven	C 20			Small-population in Europe		
the US	+13 countries			+3 countries	+6 countries	
the UK						
Germany	Australia	Argentina	South Africa	Norway	Belgium	
France	China	Indonesia	Turkey	Sweden	Denmark	
Italy	Russia	Korea	Euro area	Finland	Iceland	
Japan	Brazil	Mexico			Luxemburg	
Canada	India	Saudi Arabia			Netherlands	
	+Spain				Switzerland	

Note: 'Euro area' is shown, based on the statistics in IFSY, IMF.

Ten tables, S-1 to S-5, are shown including the above 36 countries and 9 typical countries. The speed years for convergence are a direct expression of the endogenous-equilibrium by year and over years. The most sustainable countries are Norway and Canada, where the speed years satisfy Axiom of a constant capital-output ratio most easily since $\Omega = \Omega^* = \Omega_0$ holds completely.

Table 1 Money neutrality test using 10yrs debt yield and the exchange rate by country

	17 Asia ar	Euro area	15 Europe	1. Argentina		17 Asia ar	Euro area	15 Europe	1. Argentina
$F_{10yrs, DEB}^+/r^+$					$e_{(US)/e^+}$ (US)				
					$e_{(US)}^{+}e_{(US)}^{+}+(r^+-r^+)$ (US)				
1990	3.872		6.039	0.829	1990	1.0382		1.0002	0.6331
1991	3.690		2.459	0.128	1991	1.0319		1.0000	0.3075
1992	4.027		2.081	0.039	1992	1.0482		1.0000	0.1277
1993	4.234		1.752	0.398	1993	1.0486		1.0000	0.6706
1994	4.705		4.913	0.552	1994	1.0455		1.0000	0.7819
1995	4.691		3.540	0.743	1995	1.0425		0.9996	0.8644
1996	4.405		3.380	0.575	1996	1.0422		0.9990	0.9060
1997	4.341		1.229	0.606	1997	1.0378		0.9955	0.9255
1998	3.984		0.918	0.847	1998	1.0403		0.9948	0.9457
1999	5.397	1.641	0.707	1.007	1999	1.0495	1.0392	0.9943	0.9471
2000	4.789	1.864	0.592	1.087	2000	1.0522	1.0350	0.9945	0.9648
2001	5.403	1.707	0.485	3.135	2001	1.0726	1.0425	0.9948	0.9875
2002	5.443	1.006	0.421	3.817	2002	1.0829	1.0507	0.9946	0.9880
2003	4.780	1.456	0.324	1.406	2003	1.0746	1.1036	0.9934	0.9887
2004	4.349	1.422	0.310	0.459	2004	1.0682	1.1130	0.9937	0.9853
2005	4.444	1.182	0.283	0.378	2005	1.0887	1.1087	0.9956	0.9835
2006	4.447	1.280	0.364	0.418	2006	1.0655	1.0980	0.9966	0.9644
2007	4.027	1.237	0.448	0.533	2007	1.0587	1.1073	0.9964	0.9597
2008	4.798	1.421	0.568	0.860	2008	1.0756	1.1326	0.9985	0.9602
2009	6.751	1.415	0.596	0.919	2009	1.0870	1.1692	1.0003	1.3187
2010	4.124	1.335	0.569	0.385	2010	1.0937	1.1578	1.0002	27.0140
2011	4.282	1.533	0.592	0.475	2011	1.0981	1.1524	1.0005	8.6280
2012	4.185	1.097	0.602	0.568	2012	1.0982	1.1565	1.0008	4.6139
	1. the US	1.Austria	1.Denmark	2.Bolivia		1. the US	1.Austria	1.Denmark	2.Bolivia
$F_{10yrs, DEB}^+/r^+$					$e_{(US)/e^+}$ (US)				
					$e_{(US)}^{+}e_{(US)}^{+}+(r^+-r^+)$ (US)				
1990	1.024	2.050	0.968	1.318	1990	1.0110	1.0052	0.9978	0.0577
1991	1.034	2.010	0.950	1.062	1991	1.0099	1.0043	0.9980	0.0053
1992	0.848	1.989	1.016	0.883	1992	1.0116	1.0049	1.0005	0.0000
1993	0.829	1.709	0.823	0.841	1993	1.0151	1.0040	1.0001	0.0001
1994	1.046	1.653	0.875	0.719	1994	1.0129	1.0039	0.9998	0.0227
1995	1.136	1.603	0.787	0.697	1995	1.0197	1.0043	0.9977	0.0060
1996	1.141	1.260	0.636	0.703	1996	1.0183	1.0034	0.9973	0.0435
1997	1.170	1.238	0.537	0.703	1997	1.0164	1.0026	0.9967	0.0726
1998	0.975	1.132	0.566	0.747	1998	1.0124	1.0026	0.9980	0.0630
1999	1.014	1.395	0.488	0.823	1999	1.0104	1.0383	0.9970	0.0115
2000	1.035	1.597	0.493	0.839	2000	1.0079	1.0342	0.9942	0.0002
2001	0.785	1.682	0.511	0.782	2001	1.0135	1.0419	0.9967	0.1104
2002	0.664	1.577	0.684	0.679	2002	1.0250	1.0712	1.0007	0.0081
2003	0.553	1.390	0.628	0.553	2003	1.0245	1.1016	1.0035	0.0831
2004	0.604	1.164	0.669	0.508	2004	1.0248	1.1021	1.0053	0.0016
2005	0.609	0.965	0.581	0.540	2005	1.0367	1.1000	1.0053	0.0192
2006	0.699	0.955	0.581	0.450	2006	1.0229	1.0830	1.0026	0.0030
2007	0.660	0.886	0.708	0.394	2007	1.0213	1.0835	1.0007	0.0728
2008	0.462	0.962	0.910	0.401	2008	1.0261	1.1070	1.0042	0.0809
2009	0.379	1.270	1.071	0.694	2009	1.0308	1.1642	1.0159	8.302
2010	0.382	0.998	0.817	0.454	2010	1.0359	1.1506	1.0114	1.0844
2011	0.320	0.931	0.775	0.399	2011	1.0346	1.1461	1.0109	1.3880
2012	0.334	0.662	0.623	0.360	2012	1.0376	1.1425	1.0115	0.0000
	2. Canada	2.Belgium	2.Iceland	2.Brazil		2. Canada	2.Belgium	2.Iceland	2.Brazil
$F_{10yrs, DEB}^+/r^+$					$e_{(US)/e^+}$ (US)				
					$e_{(US)}^{+}e_{(US)}^{+}+(r^+-r^+)$ (US)				
1990	3.238	1.350	1.219	15.304	1990	1.0592	1.0008	1.0004	1.0005
1991	2.504	1.169	1.224	3.987	1991	1.0454	1.0003	1.0001	0.9996
1992	2.080	1.214	0.992	4.345	1992	1.0447	1.0008	1.0003	1.0000
1993	1.939	1.019	1.014	18.819	1993	1.0362	1.0005	1.0003	1.0004
1994	2.505	1.018	0.786	8.096	1994	1.0364	1.0002	1.0003	1.0000
1995	2.507	0.936	1.155	45.254	1995	1.0383	1.0001	1.0003	1.0724
1996	2.281	0.769	0.904	38.279	1996	1.0348	0.9998	1.0003	1.0592
1997	1.921	0.620	0.889	34.690	1997	1.0278	0.9994	1.0001	1.0465
1998	1.664	0.544	0.767	36.961	1998	1.0237	0.9995	1.0001	1.0386
1999	1.525	0.578	0.694	32.800	1999	1.0203	0.9830	0.9999	1.0237
2000	1.185	0.801	0.694	19.650	2000	1.0107	0.9962	0.9999	1.0191
2001	1.401	1.357	0.905	18.851	2001	1.0221	1.0346	1.0002	1.0199
2002	1.474	1.600	0.876	19.873	2002	1.0371	1.0718	1.0004	1.0182
2003	1.368	1.663	0.629	19.647	2003	1.0523	1.1089	1.0005	1.0244
2004	1.227	1.221	0.620	14.592	2004	1.0545	1.1048	1.0007	1.0255
2005	1.015	1.196	0.531	14.055	2005	1.0630	1.1093	1.0007	1.0321
2006	1.045	1.140	0.748	12.114	2006	1.0513	1.0928	1.0005	1.0250
2007	1.034	1.318	0.956	9.730	2007	1.0634	1.1112	1.0004	1.0177
2008	0.965	1.572	0.960	9.661	2008	1.0633	1.1372	1.0003	1.0153
2009	11.413	1.483	1.055	8.542	2009	1.0997	1.1735	1.0007	2.4560
2010	1.095	1.287	0.877	7.499	2010	1.1072	1.1604	1.0006	(0.7189)
2011	0.979	1.555	0.754	7.146	2011	1.1057	1.1540	1.0006	(0.8590)
2012	0.726	1.098	0.648	4.899	2012	1.0947	1.1573	1.0006	(1.0389)

Data source: KEWT database 6.12/7.13, 1960/90–2010/11, by 12 countries for four areas.

Original data, from *International Financial Statistics Yearbook*, IMF, by year (hereunder abbreviated).

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Table 2 Money neutrality test using 10yrs debt yield and the exchange rate by country

	3.Australia	3.Finland	3.Norway	4.Chile		3.Australia	3.Finland	3.Norway	4.Chile
$F_{10yrs,DEBT}/r^e$					$e_{(US)/e^*_{(US)}}$				
						$e^*_{(US)}=e_{(US)}+(r^*-r^*_{(US)})$			
1990	2.852	1.721	0.665	4.906	1990	1.0420	1.0086	0.9895	1.0000
1991	2.988	2.827	0.674	2.918	1991	1.0423	1.0116	0.9905	1.0000
1992	2.554	2.988	0.899	2.069	1992	1.0434	1.0108	0.9982	0.9999
1993	2.092	2.369	0.585	1.716	1993	1.0365	1.0087	0.9967	0.9999
1994	2.632	2.323	0.626	0.997	1994	1.0398	1.0096	0.9956	0.9997
1995	2.575	1.601	0.618	0.734	1995	1.0369	1.0066	0.9958	0.9999
1996	2.203	1.268	0.446	1.028	1996	1.0345	1.0066	0.9916	1.0000
1997	1.845	0.803	0.327	1.110	1997	1.0232	1.0011	0.9886	1.0000
1998	1.343	0.626	0.530	1.378	1998	1.0171	0.9966	0.9957	1.0000
1999	1.572	0.675	0.431	1.304	1999	1.0182	0.9963	0.9927	1.0000
2000	1.571	0.679	0.404	1.304	2000	1.0144	0.9844	0.9897	1.0000
2001	1.414	0.598	0.431	0.661	2001	1.0187	0.9926	0.9922	1.0000
2002	1.433	0.717	0.525	0.445	2002	1.0317	1.0274	0.9963	1.0000
2003	1.313	0.837	0.391	0.394	2003	1.0488	1.0275	0.9982	1.0000
2004	1.330	0.837	0.277	0.205	2004	1.0505	1.0803	0.9957	0.9999
2005	1.077	0.741	0.206	0.270	2005	1.0482	1.0858	0.9931	0.9999
2006	1.139	0.803	0.219	0.241	2006	1.0402	1.0718	0.9865	0.9997
2007	1.133	0.689	0.296	0.265	2007	1.0442	1.0602	0.9844	0.9997
2008	0.861	0.886	0.233	0.348	2008	1.0338	1.1018	0.9855	0.9999
2009	0.949	1.260	0.269	0.426	2009	1.0730	1.1669	1.0009	1.0022
2010	0.852	0.990	0.220	0.201	2010	1.0735	1.1541	0.9980	1.0019
2011	0.656	0.978	0.265	0.232	2011	1.0602	1.1479	1.0030	1.0027
2012	0.528	0.585	0.203	0.318	2012	1.0741	1.1489	1.0067	1.0020
	4.New Zea	4.France	4.Sweden	5.Colombia		4.New Zea	4.France	4.Sweden	5.Colombia
$F_{10yrs,DEBT}/r^e$					$e_{(US)/e^*_{(US)}}$				
						$e^*_{(US)}=e_{(US)}+(r^*-r^*_{(US)})$			
1990	4.535	2.535	1.676	3.126	1990	1.0442	1.0116	1.0036	0.9999
1991	0.369	2.395	1.431	3.081	1991	1.0373	1.0100	1.0026	0.9999
1992	3.014	2.350	1.413	2.634	1992	1.0394	1.0110	1.0037	0.9999
1993	2.473	1.871	1.240	2.368	1993	1.0334	1.0085	1.0022	0.9999
1994	2.657	2.026	1.469	2.608	1994	1.0341	1.0089	1.0026	0.9999
1995	2.684	2.024	1.115	2.516	1995	1.0364	1.0094	0.9987	0.9999
1996	2.896	1.674	1.011	2.807	1996	1.0375	1.0078	0.9999	0.9999
1997	2.770	1.520	0.928	2.050	1997	1.0275	1.0059	1.0001	0.9999
1998	2.530	1.258	0.698	2.330	1998	1.0230	1.0055	0.9996	0.9999
1999	2.419	1.371	0.660	1.355	1999	1.0216	1.0030	0.9989	0.9999
2000	2.565	1.576	0.662	1.205	2000	1.0174	1.0297	0.9984	1.0000
2001	1.672	1.426	0.650	1.133	2001	1.0165	1.0376	0.9997	1.0000
2002	1.860	1.408	0.738	0.952	2002	1.0333	1.0676	1.0026	1.0000
2003	1.653	1.184	0.657	1.215	2003	1.0474	1.0940	1.0045	1.0000
2004	1.999	1.158	0.552	0.964	2004	1.0560	1.1025	1.0036	1.0000
2005	2.201	0.950	0.405	0.960	2005	1.0615	1.0989	1.0036	1.0000
2006	2.296	1.064	0.376	0.938	2006	1.0534	1.0893	0.9993	1.0000
2007	2.363	1.209	0.373	1.157	2007	1.0590	1.1063	0.9944	1.0000
2008	2.464	1.195	0.391	1.329	2008	1.0548	1.1242	0.9980	1.0000
2009	1.889	0.915	0.531	1.116	2009	1.0814	1.1472	1.0096	1.0005
2010	1.860	0.776	0.382	0.842	2010	1.0873	1.1370	1.0058	1.0020
2011	1.244	0.861	0.298	0.886	2011	1.0818	1.1348	1.0039	1.0020
2012	0.745	0.655	0.204	1.120	2012	1.0784	1.1374	1.0057	1.0023
	5.Mexico	5.Germany	5.Switzerla	6.Paraguay		5.Mexico	5.Germany	5.Switzerla	6.Paraguay
$F_{10yrs,DEBT}/r^e$					$e_{(US)/e^*_{(US)}}$				
						$e^*_{(US)}=e_{(US)}+(r^*-r^*_{(US)})$			
1990	9.491	1.369	0.542	1.077	1990	1.0048	1.0229	0.9812	1.0000
1991	7.282	1.911	0.699	0.943	1991	0.9977	1.0301	0.9988	0.9999
1992	4.407	1.811	0.671	0.909	1992	0.9875	1.0337	1.0103	1.0000
1993	6.798	1.556	0.565	0.808	1993	1.0019	1.0276	1.0103	1.0000
1994	6.571	1.530	0.686	0.711	1994	1.0007	1.0266	1.0057	1.0000
1995	5.784	1.513	0.355	0.829	1995	0.9992	1.0290	0.9815	1.0000
1996	2.474	1.411	0.411	0.892	1996	0.9932	1.0258	0.9931	1.0000
1997	1.505	1.289	0.368	0.926	1997	0.9914	1.0186	0.9922	1.0000
1998	2.121	1.101	0.304	1.007	1998	0.9971	1.0173	0.9851	1.0000
1999	2.143	1.552	0.439	0.986	1999	0.9971	1.0403	0.9898	1.0000
2000	1.704	1.933	0.391	0.934	2000	0.9972	1.0371	0.9848	1.0000
2001	1.251	1.804	0.464	0.897	2001	0.9993	1.0453	0.9994	1.0000
2002	1.299	1.791	0.332	0.737	2002	1.0016	1.0771	1.0167	1.0000
2003	1.078	1.618	0.427	0.723	2003	1.0017	1.1089	1.0315	1.0000
2004	1.033	1.551	0.343	0.536	2004	1.0010	1.1182	1.0313	1.0000
2005	1.127	1.294	0.279	0.625	2005	1.0027	1.1134	1.0329	1.0000
2006	0.864	1.277	0.273	0.623	2006	1.0001	1.0992	1.0024	1.0000
2007	0.844	1.048	0.277	0.563	2007	1.0008	1.0979	0.9685	1.0000
2008	0.994	1.097	0.187	0.613	2008	1.0023	1.1225	0.9717	1.0000
2009	1.367	1.298	0.228	0.625	2009	1.0054	1.1765	1.0426	1.0002
2010	1.193	0.991	0.188	0.763	2010	1.0058	1.1591	1.0279	1.0009
2011	1.016	0.900	0.079	0.632	2011	1.0047	1.1509	1.0222	1.0009
2012	0.874	0.522	0.082	0.321	2012	1.0051	1.1548	1.0258	1.0009

Data source: KEWT database 6.12/7.13, 1960/90–2010/11, by 12 countries for four areas.

Table 3 Money neutrality test using 10yrs debt yield and the exchange rate by country

	6.Banglad	6.Greece	6. the UK	7. Peru		6.Banglad	6.Greece	6. the UK	7. Peru
$F_{10yrs, DEBT}/r^*$					$e_{(US)/e^*(US)}$		$e_{(US)}=e_{(US)}+(r^*-r)$		$e_{(US)}=e_{(US)}+(r^*-r)$
1990	1.218	2.362	0.860	73.454	1990	0.9991	1.0001	0.9844	0.9989
1991	1.439	2.581	0.656	74.001	1991	0.9994	1.0001	0.9679	1.0000
1992	1.263	2.310	0.514	10.898	1992	0.9994	1.0000	0.9492	1.0000
1993	1.089	2.106	0.425	5.526	1993	0.9987	1.0000	0.9378	1.0000
1994	1.127	1.990	0.488	3.584	1994	0.9989	1.0000	0.9505	1.0000
1995	1.053	1.595	0.611	2.016	1995	0.9988	0.9999	0.9676	0.9782
1996	1.291	1.467	0.596	2.040	1996	0.9993	0.9999	0.9675	0.9815
1997	1.437	1.490	0.568	2.702	1997	0.9994	1.0001	0.9691	0.9859
1998	1.588	0.916	0.435	1.670	1998	0.9996	1.0001	0.9668	0.9898
1999	1.655	0.702	0.350	1.640	1999	0.9996	1.0001	0.9595	0.9932
2000	1.653	0.443	0.328	1.448	2000	0.9995	1.0000	0.9509	0.9940
2001	0.994	4.054	0.331	1.176	2001	0.9985	1.1153	0.9504	0.9969
2002	1.140	3.970	0.302	1.281	2002	0.9992	1.1386	0.9595	1.0045
2003	1.812	2.471	0.276	1.257	2003	1.0002	1.1666	0.9658	1.0083
2004	1.684	2.087	0.291	1.150	2004	1.0003	1.1761	0.9672	1.0073
2005	1.618	1.631	0.244	1.064	2005	1.0004	1.1444	0.9607	1.0042
2006	1.760	1.988	0.261	0.593	2006	1.0002	1.1692	0.9641	0.9732
2007	1.808	1.904	0.329	0.546	2007	1.0002	1.1864	0.9628	0.9629
2008	1.810	1.517	0.274	0.750	2008	1.0004	1.1567	0.9460	0.9823
2009	1.600	1.372	0.187	0.957	2009	1.0005	1.1540	0.9607	1.5243
2010	1.388	2.827	0.191	0.606	2010	1.0005	1.1510	0.9548	(2.4752)
2011	1.415	5.174	0.167	0.461	2011	1.0004	1.1461	0.9555	(2.2101)
2012	1.375	8.370	0.092	0.526	2012	1.0004	1.1581	0.9440	(1.8491)
	7. China	7. Ireland	1.Bulgaria	8. Iran		7. China	7. Ireland	1.Bulgaria	8. Iran
$F_{10yrs, DEBT}/r^*$					$e_{(US)/e^*(US)}$		$e_{(US)}=e_{(US)}+(r^*-r)$		$e_{(US)}=e_{(US)}+(r^*-r)$
1990	0.852	1.489	0.000	0.000	1990	0.9978	1.0576	0.0000	0.9999
1991	0.749	1.756	0.000	0.000	1991	0.9952	1.0691	0.0000	0.9992
1992	0.677	1.891	0.000	0.000	1992	0.9946	1.0856	0.0000	0.9983
1993	0.738	1.325	0.000	0.000	1993	0.9894	1.0419	0.0000	1.0000
1994	0.626	1.449	0.000	0.000	1994	0.9892	1.0438	0.0000	0.9999
1995	0.815	0.875	1.241	0.000	1995	0.9923	0.9819	0.1821	0.9999
1996	0.714	0.693	2.572	0.000	1996	0.9926	0.9535	0.5968	0.9999
1997	0.610	0.429	0.346	0.000	1997	0.9917	0.8982	0.5164	0.9999
1998	0.490	0.523	0.158	0.000	1998	0.9926	0.8775	0.7454	0.9999
1999	0.492	1.436	0.153	0.000	1999	0.9936	1.0227	0.7677	0.9999
2000	0.502	0.947	0.166	0.000	2000	0.9939	1.0011	0.8476	0.9999
2001	0.502	0.803	0.202	0.000	2001	0.9951	1.0086	0.8965	0.9999
2002	0.442	0.716	0.175	0.000	2002	0.9970	1.0252	0.8667	1.0000
2003	0.404	0.588	0.192	0.000	2003	0.9966	1.0398	0.8695	1.0000
2004	0.383	0.567	0.261	0.000	2004	0.9949	1.0404	0.9338	1.0000
2005	0.370	0.430	0.186	0.000	2005	0.9953	1.0350	0.9455	1.0000
2006	0.391	0.502	0.229	0.000	2006	0.9925	1.0227	0.9439	1.0000
2007	0.430	0.645	0.229	0.000	2007	0.9901	1.0479	0.9156	1.0000
2008	0.304	1.186	0.533	0.000	2008	0.9913	1.1154	0.9880	1.0000
2009	0.294	1.541	1.138	0.000	2009	0.9925	1.1593	1.0502	1.0000
2010	0.330	1.667	0.919	0.000	2010	0.9932	1.1470	1.0346	1.0000
2011	0.393	2.174	1.028		2011	0.9943	1.1255	1.0396	
2012	0.401	1.854	1.136		2012	0.9969	1.1156	1.0437	
	8. India	8. Italy	2. Czech	R9.Kazakhstan		8. India	8. Italy	2. Czech	R9.Kazakhstan
$F_{10yrs, DEBT}/r^*$					$e_{(US)/e^*(US)}$		$e_{(US)}=e_{(US)}+(r^*-r)$		$e_{(US)}=e_{(US)}+(r^*-r)$
1990	3.611	1.493	0.000		1990	1.0029	1.0000	0.0000	
1991	3.661	1.779	0.000		1991	1.0016	1.0000	0.0000	
1992	3.473	1.841	0.000		1992	1.0016	1.0000	0.0000	
1993	2.856	1.625	0.000		1993	1.0010	1.0000	0.0000	
1994	2.077	1.529	0.000		1994	1.0004	1.0000	0.0000	
1995	1.886	1.429	0.154	0.000	1995	1.0000	1.0000	0.9726	1.0005
1996	2.211	1.246	0.280	0.000	1996	1.0002	1.0000	0.9867	1.0001
1997	1.768	0.927	0.657	0.000	1997	0.9998	1.0000	0.9963	0.9996
1998	2.045	0.702	1.231	0.000	1998	1.0000	1.0000	0.9988	0.9993
1999	1.844	0.593	0.524	0.000	1999	1.0000	0.9979	0.9972	0.9999
2000	1.757	0.746	0.381	0.000	2000	0.9999	0.9951	0.9971	0.9995
2001	1.784	0.693	0.363	0.354	2001	1.0002	1.0078	0.9980	0.9995
2002	1.486	0.680	0.599	0.328	2002	1.0003	1.0314	1.0009	0.9996
2003	1.227	0.488	0.603	0.329	2003	1.0002	1.0449	1.0009	0.9995
2004	0.809	0.502	0.441	0.160	2004	0.9993	1.0532	1.0005	0.9992
2005	0.842	0.417	0.336	0.140	2005	0.9997	1.0530	1.0002	0.9991
2006	0.860	0.555	0.319	0.124	2006	0.9993	1.0428	0.9990	0.9987
2007	1.000	0.672	0.390	0.320	2007	0.9993	1.0582	0.9976	0.9988
2008	1.126	0.635	0.474	0.276	2008	0.9999	1.0704	0.9997	0.9986
2009	1.076	0.382	0.652	0.547	2009	1.0003	1.0708	1.0037	1.0065
2010	0.701	0.363	0.674	0.381	2010	1.0003	1.0721	1.0030	1.0272
2011	0.855	0.545	0.722	0.313	2011	1.0002	1.0611	1.0032	1.0267
2012	1.027	0.597	0.770	0.330	2012	1.0005	1.0779	1.0034	1.0264

Data source: KEWT database 6.12/7.13, 1960/90–2010/11, by 12 countries for four areas.

Hideyuki Kamiryō: Two Supplemental Proofs such that the Real Rate of Profits>Returns Equals
 ever Zero, actually and endogenously, under the Money-Neutral

Table 4 Money neutrality test using 10Yrs debt yield and the exchange rate by country

	9.Indonesia	9.Luxemb	3.Hungary	10.Kuwait		9.Indonesia	9.Luxemb	3.Hungary	10.Kuwait
F_{10Yrs_DEBT}/r^*					$e_{(US)/e^*(US)}$				
						$e_{(US)/e^*(US)}$	$e_{(US)/e^*(US)}$	$e_{(US)/e^*(US)}$	$e_{(US)/e^*(US)}$
1990	0.798		3.073	0.862	1990	0.9999		1.0001	0.9921
1991	1.074		1.585	1.354	1991	0.9999		0.9999	1.0065
1992	0.942		3.393	1.282	1992	0.9999		1.0000	1.0105
1993	1.226		1.085	1.323	1993	1.0000		0.9985	1.0080
1994	1.089		1.582	0.776	1994	1.0000		0.9992	0.9957
1995	1.341	0.755	2.772	0.692	1995	1.0000	1.0001	0.9998	0.9889
1996	1.436	0.637	2.236	0.388	1996	1.0000	0.9999	0.9997	0.9577
1997	1.407	0.754	1.698	0.381	1997	1.0000	0.9999	0.9997	0.9538
1998	2.663	0.624	1.553	4.362	1998	1.0000	0.9998	0.9997	1.0146
1999	3.781	0.403	1.376	3.703	1999	1.0000	0.9526	0.9998	1.0132
2000	0.755	0.420	1.118	1.820	2000	1.0000	0.9422	0.9998	1.0052
2001	0.766	0.512	0.690	2.096	2001	1.0000	0.9834	0.9999	1.0119
2002	1.380	0.538	0.635	1.878	2002	1.0000	1.0080	0.9999	1.0184
2003	1.637	0.332	0.412	0.927	2003	1.0000	1.0038	0.9997	1.0133
2004	1.291	0.306	0.625	0.569	2004	1.0000	1.0148	0.9998	1.0013
2005	0.928	0.220	0.478	0.397	2005	1.0000	1.0031	0.9999	0.9782
2006	0.910	0.260	0.662	0.325	2006	1.0000	0.9630	0.9999	0.9532
2007	0.859	0.316	0.683	0.299	2007	1.0000	0.9422	0.9999	0.9459
2008	0.622	0.399	0.915	0.205	2008	1.0000	0.9990	1.0000	0.9266
2009	0.667	0.508	1.069	0.298	2009	1.0000	1.0703	1.0002	1.3361
2010	0.615	0.330	0.793	0.167	2010	1.0000	1.0481	1.0001	1.2850
2011	0.589	0.302	0.834	0.119	2011	1.0000	1.0456	1.0001	1.2201
2012	0.625	0.196	0.875	0.111	2012	1.0000	1.0572	1.0001	1.2175
	10. Japan	10.Nether	4. Latvia	11.Pakistan		10. Japan	10.Nether	4. Latvia	11.Pakistan
F_{10Yrs_DEBT}/r^*					$e_{(US)/e^*(US)}$				
						$e_{(US)/e^*(US)}$	$e_{(US)/e^*(US)}$	$e_{(US)/e^*(US)}$	$e_{(US)/e^*(US)}$
1990	2.137	1.336	0.000	0.366	1990	1.0005	1.0190	0.0000	0.9945
1991	1.887	1.409	0.000	0.489	1991	1.0004	1.0161	0.0000	0.9971
1992	1.196	1.487	0.000	0.469	1992	1.0004	1.0238	0.0000	0.9974
1993	1.058	1.244	0.000	0.394	1993	1.0005	1.0181	0.0000	0.9966
1994	1.260	1.196	0.000	0.458	1994	1.0005	1.0137	0.0000	0.9977
1995	0.882	1.103	6.421	0.749	1995	1.0005	1.0114	1.0582	0.9974
1996	0.820	1.037	3.645	0.680	1996	1.0004	1.0095	1.0150	0.9972
1997	0.550	0.877	2.486	0.608	1997	1.0003	1.0029	1.0185	0.9968
1998	0.502	0.555	2.200	0.327	1998	1.0004	0.9898	1.0059	0.9983
1999	1.030	0.906	2.221	0.221	1999	1.0005	1.0119	1.0036	0.9976
2000	0.985	0.911	2.412	0.247	2000	1.0004	1.0048	1.0274	0.9982
2001	0.919	0.830	1.599	0.292	2001	1.0005	1.0143	1.0466	0.9985
2002	0.979	0.927	1.119	5.286	2002	1.0007	1.0463	1.0851	0.9991
2003	0.788	0.848	0.951	0.235	2003	1.0008	1.0736	1.1049	0.9993
2004	1.131	0.761	1.043	0.304	2004	1.0009	1.0730	1.1243	0.9992
2005	1.088	0.536	0.854	0.328	2005	1.0008	1.0617	1.1269	0.9987
2006	1.385	0.572	0.866	0.414	2006	1.0007	1.0439	1.0948	0.9982
2007	1.251	0.565	1.079	0.556	2007	1.0008	1.0380	1.0586	0.9985
2008	1.258	0.561	1.334	0.440	2008	1.0011	1.0579	1.0781	0.9977
2009	1.254	0.781	3.329	0.414	2009	1.0013	1.1333	1.2304	1.0093
2010	1.093	0.618	3.015	0.345	2010	1.0015	1.1230	1.1763	1.0083
2011	1.045	0.515	3.121	0.241	2011	1.0015	1.1031	1.1793	1.0059
2012	0.712	0.363	3.228	0.132	2012	1.0014	1.1135	1.1822	1.0020
	11. Korea	11.Portuga	5. Poland	12.Saudi Arabia		11. Korea	11.Portuga	5. Poland	12.Saudi A
F_{10Yrs_DEBT}/r^*					$e_{(US)/e^*(US)}$				
						$e_{(US)/e^*(US)}$	$e_{(US)/e^*(US)}$	$e_{(US)/e^*(US)}$	$e_{(US)/e^*(US)}$
1990	1.607	3.116	5.318	0.000	1990	1.0000	1.0003	0.9137	0.9852
1991	1.671	2.201	5.873	0.000	1991	1.0000	1.0000	0.9966	1.0008
1992	1.580	1.993	3.385	0.000	1992	1.0000	1.0001	0.9883	0.9936
1993	1.270	1.463	2.424	0.000	1993	1.0000	1.0000	0.9732	0.9961
1994	1.281	1.200	2.110	0.000	1994	1.0000	1.0000	0.9714	0.9809
1995	1.300	1.370	1.685	0.000	1995	1.0000	1.0001	0.9553	0.9867
1996	1.192	0.971	1.097	0.000	1996	1.0000	1.0000	0.9476	0.9752
1997	1.304	0.788	1.126	0.000	1997	1.0000	1.0000	0.9591	0.9743
1998	1.414	0.538	1.323	0.000	1998	1.0000	1.0000	0.9677	0.9990
1999	0.674	2.081	0.969	0.000	1999	0.9999	1.0440	0.9745	0.9867
2000	0.786	1.414	1.151	0.000	2000	0.9675	1.0289	0.9745	0.9766
2001	0.760	1.452	0.573	0.000	2001	0.9907	1.0367	0.9730	0.9860
2002	0.779	1.410	0.334	0.000	2002	1.0098	1.0664	0.9683	0.9885
2003	0.502	1.111	0.299	0.000	2003	1.0045	1.0899	0.9763	0.9804
2004	0.383	0.968	0.429	0.000	2004	0.9869	1.0904	0.9813	0.9652
2005	0.490	0.882	0.361	0.000	2005	1.0164	1.0946	0.9902	0.9441
2006	0.630	1.022	0.401	0.000	2006	1.0186	1.0852	0.9877	0.9377
2007	0.679	1.225	0.512	0.000	2007	1.0228	1.1054	0.9873	0.9370
2008	0.828	1.064	0.652	0.000	2008	1.0369	1.1118	0.9970	0.9226
2009	0.748	1.008	0.701	0.000	2009	1.0551	1.1436	1.0147	1.3190
2010	0.506	1.252	0.704	0.000	2010	1.0362	1.1319	1.0111	1.2913
2011	0.493	2.682	0.778	0.000	2011	1.0426	1.1354	1.0137	1.2530
2012	0.471	2.733	0.851	0.000	2012	1.0567	1.1377	1.0160	1.2569

Data source: KEWT database 6.12/7.13, 1960/90–2010/11, by 12 countries for four areas.

Table 5 Money neutrality test using 10yrs debt yield and the exchange rate by country

	12.Malays	12.Slovak	6.Romania	13.Algeria		12.Malays	12.Slovak	6.Romania	13.Algeria
$F_{10yrs, DEBT}/r^*$					$e_{(US/e^*)_{(US)}}$				
									$e_{(US^*e_{(US)}+r^*-r^*)_{(US)}}$
1990	0.813		0.000	1.793	1990	1.0038		0.0000	1.0012
1991	0.946		0.000	0.950	1991	1.0012		0.0000	0.9968
1992	1.000		0.000	1.066	1992	1.0013		0.0000	0.9981
1993	0.894		0.000	1.313	1993	0.9947		0.0000	0.9989
1994	0.753		0.000	1.368	1994	0.9933		0.0000	0.9992
1995	0.658	4.633	19.050	1.394	1995	0.9939	1.0006	1.2842	0.9990
1996	0.579	5.549	9.758	0.501	1996	0.9878	1.0011	1.0885	0.9982
1997	0.625	3.928	3.818	0.734	1997	0.9904	1.0006	0.9608	0.9983
1998	0.632	3.571	2.573	0.907	1998	0.9862	1.0007	0.9417	0.9990
1999	0.487	1.926	2.249	0.724	1999	0.9871	1.0003	0.9644	0.9988
2000	0.427	1.569	1.013	0.361	2000	0.9860	1.0003	0.9347	0.9972
2001	0.377	1.746	0.816	0.435	2001	0.9953	1.0006	0.9491	0.9982
2002	0.363	1.517	0.653	0.446	2002	0.9998	1.0012	0.9613	0.9988
2003	0.362	1.019	0.614	0.363	2003	1.0009	1.0016	0.9677	0.9983
2004	0.375	0.945	0.583	0.327	2004	0.9985	1.0018	0.9716	0.9981
2005	0.321	0.632	0.529	0.251	2005	1.0002	1.0018	0.9817	0.9972
2006	0.342	0.805	0.489	0.243	2006	0.9946	1.0016	0.9795	0.9967
2007	0.297	0.588	0.552	0.265	2007	0.9942	1.0011	0.9786	0.9966
2008	0.279	0.707	0.646	0.271	2008	0.9946	1.0023	0.9878	0.9970
2009	0.385	4.232	0.979	0.506	2009	1.0105	1.2069	1.0102	1.0129
2010	0.336	3.931	0.938	0.265	2010	1.0083	1.1919	1.0114	1.0105
2011	0.292	3.516	1.080	0.477	2011	1.0038	1.1826	1.0147	1.0122
2012	0.333	0.380	1.221	#DIV/0!	2012	1.0108	1.0390	1.0173	#DIV/0!
	13.Philippi	13.Sloveni	7. Russia	14. Egypt		13.Philippi	13.Sloveni	7. Russia	14. Egypt
$F_{10yrs, DEBT}/r^*$					$e_{(US/e^*)_{(US)}}$				
									$e_{(US^*e_{(US)}+r^*-r^*)_{(US)}}$
1990	1.747			1.583	1990	0.9986			0.9893
1991	1.494			1.558	1991	0.9976			0.9884
1992	1.135			1.647	1992	0.9970			0.9921
1993	0.809			1.522	1993	0.9966			0.9902
1994	0.922			1.236	1994	0.9967			0.9855
1995	0.868	4.944	30.249	1.209	1995	0.9969	1.0003	1.0073	0.9846
1996	0.864	4.308	27.560	0.894	1996	0.9969	1.0002	1.0046	0.9726
1997	0.802	3.158	9.818	1.092	1997	0.9978	1.0001	1.0067	0.9842
1998	0.885	2.414	13.095	0.742	1998	0.9966	1.0000	1.0018	0.9694
1999	0.650	1.978	2.839	0.912	1999	0.9969	1.0000	0.9973	0.9780
2000	0.672	2.506	0.411	0.893	2000	0.9978	1.0000	0.9816	0.9782
2001	0.781	2.230	0.419	0.979	2001	0.9981	1.0000	0.9885	0.9868
2002	0.544	1.757	0.469	1.072	2002	0.9988	1.0000	0.9925	0.9925
2003	0.593	0.870	0.386	1.096	2003	0.9992	1.0002	0.9921	0.9967
2004	0.684	0.578	0.327	1.152	2004	0.9992	1.0001	0.9913	0.9979
2005	0.593	0.477	0.217	1.128	2005	0.9994	1.0002	0.9914	0.9993
2006	0.420	0.443	0.191	1.185	2006	0.9984	1.0001	0.9903	0.9979
2007	0.284	0.250	0.212	1.050	2007	0.9979	0.8941	0.9906	0.9922
2008	0.488	0.323	0.247	1.058	2008	0.9986	0.9626	0.9925	0.9941
2009	0.352	0.649	0.586	0.659	2009	0.9975	1.0971	0.9986	1.1973
2010	0.325	0.714	0.251	0.713	2010	0.9976	1.1142	0.9939	3.1092
2011	0.222	0.756	0.378	#DIV/0!	2011	0.9961	1.1149	0.9972	#DIV/0!
2012	0.134	0.812	0.182	#DIV/0!	2012	0.9929	1.1233	0.9939	#DIV/0!
	14.Singap	14. Spain	8. Turkey	15. Kenya		14.Singap	14. Spain	8. Turkey	15. Kenya
$F_{10yrs, DEBT}/r^*$					$e_{(US/e^*)_{(US)}}$				
									$e_{(US^*e_{(US)}+r^*-r^*)_{(US)}}$
1990	0.590	0.797	3.036	2.723	1990	0.9851	1.0004	1.0000	1.0012
1991	0.569	0.716	3.048	2.845	1991	0.9737	1.0004	1.0000	1.0008
1992	0.448	0.723	2.419	2.603	1992	0.9784	1.0004	1.0000	1.0004
1993	0.389	0.662	2.405	3.455	1993	0.9689	1.0002	1.0000	1.0000
1994	0.377	0.608	2.181	4.051	1994	0.9529	1.0002	1.0000	0.9999
1995	0.395	0.524	1.774	2.965	1995	0.9479	1.0002	0.2312	0.9998
1996	0.396	0.474	1.932	1.243	1996	0.9464	1.0002	0.3749	0.9965
1997	0.396	0.412	2.618	0.949	1997	0.9503	1.0001	0.5279	0.9961
1998	0.508	0.365	1.704	0.803	1998	0.9550	1.0001	0.4918	0.9952
1999	0.355	0.397	1.466	0.588	1999	0.9648	1.0209	0.6119	0.9957
2000	0.364	0.339	1.845	0.633	2000	0.9695	1.0191	0.7217	0.9963
2001	0.410	0.261	1.720	0.502	2001	0.9941	1.0247	0.8416	0.9960
2002	0.435	0.194	1.453	0.464	2002	1.0080	1.0484	0.8668	0.9961
2003	0.326	0.135	1.019	0.407	2003	1.0070	1.0673	0.8395	0.9960
2004	0.275	0.091	0.782	0.339	2004	0.9916	1.0820	0.8664	0.9966
2005	0.223	0.035	0.764	0.366	2005	0.9875	1.0832	0.8969	0.9967
2006	0.225	(0.023)	1.013	0.381	2006	0.9675	1.0709	0.9218	0.9962
2007	0.165	(0.084)	1.101	0.987	2007	0.9512	1.0879	0.9006	0.9991
2008	0.202	(0.167)	1.412	1.256	2008	0.9844	1.1167	0.9512	0.9996
2009	0.172	(0.280)	0.854	1.465	2009	0.9938	1.1594	0.9502	1.0131
2010	0.147	(0.392)	0.767	1.576	2010	0.9769	1.1532	0.9480	1.0520
2011	0.134	(0.493)	0.884	1.838	2011	0.9821	1.1490	0.9761	1.0494
2012	0.100	(0.610)	1.226	2.611	2012	0.9869	1.1545	0.9895	1.0489

Data source: KEWT database, 6.12/7.13, 1960/90–2010/11, by 12 countries for four areas.

Table 6 Money neutrality test using 10yrs debt yield and the exchange rate by country

	15.Sri Lan	Taiwan	9. Ukraine	16.Morocco	15.Sri Lan	Taiwan	9. Ukraine	16.Morocco
$r_{10yrs, DEBT}/r^*$				$e_{(US)}/e^*_{(US)}$		$e^*_{(US)}=e_{(US)}+(r^*-r^*_{(US)})$		
1990	1.753	8.843		1.532	1990	1.0004	1.0011	1.0049
1991	2.027	4.626		1.458	1991	0.9999	1.0007	1.0034
1992	2.579	2.716		1.492	1992	1.0003	1.0009	1.0040
1993	2.829	1.585	0.261	1.654	1993	1.0002	1.0003	0.1094
1994	2.401	0.961	0.425	1.507	1994	1.0001	1.0003	0.6444
1995	2.404	0.877	0.292	1.525	1995	1.0001	1.0002	0.6990
1996	2.425	0.846	0.406	1.363	1996	1.0000	1.0003	0.8031
1997	2.418	0.855	0.532	1.396	1997	1.0001	1.0000	0.8475
1998	2.478	0.841	2.134	0.869	1998	1.0001	0.9999	0.9927
1999	2.626	0.787	1.739	0.779	1999	1.0001	0.9998	0.9900
2000	2.690	0.738	1.117	0.805	2000	1.0001	0.9997	0.9836
2001	2.773	0.753	1.016	0.729	2001	1.0001	1.0006	0.9893
2002	1.839	0.566	0.839	0.665	2002	1.0002	1.0010	0.9911
2003	1.425	0.344	0.843	0.555	2003	1.0003	1.0011	0.9928
2004	1.341	0.399	0.479	0.506	2004	1.0003	1.0011	0.9719
2005	1.664	0.324	0.824	0.493	2005	1.0005	1.0014	0.9944
2006	1.826	0.261	0.948	0.426	2006	1.0003	1.0005	0.9951
2007	2.441	0.266	0.914	0.471	2007	1.0003	0.9996	0.9906
2008	1.865	0.372	1.070	0.416	2008	1.0001	1.0007	0.9968
2009	2.298	0.285	0.842	0.469	2009	1.0005	1.0024	1.0009
2010	1.587	0.171	0.832	0.638	2010	1.0006	1.0011	0.9984
2011	1.159	0.179	0.751	0.569	2011	1.0004	1.0013	0.9988
2012	1.941	0.187	0.257	0.502	2012	1.0005	1.0014	0.9742
	16.Thailan	17.Vietnar	18.S.Africa	17.Nigeria	16.Thailan	17.Vietnar	18.S.Africa	17.Nigeria
$r_{10yrs, DEBT}/r^*$				$e_{(US)}/e^*_{(US)}$		$e^*_{(US)}=e_{(US)}+(r^*-r^*_{(US)})$		
1990	1.600	3.198	1.654		1990	1.0013	1.0000	1.0003
1991	1.507	2.890	1.468		1991	1.0007	1.0000	0.9920
1992	1.499	2.852	1.221		1992	1.0009	1.0000	0.9903
1993	1.477	3.186	1.186		1993	1.0005	1.0000	0.9909
1994	1.407	2.649	1.250		1994	1.0003	1.0000	0.9902
1995	1.337	2.416	1.454	0.870	1995	1.0001	1.0000	0.9925
1996	1.431	2.181	1.378	0.413	1996	1.0001	1.0000	0.9929
1997	1.551	1.845	1.253	0.418	1997	1.0001	1.0000	0.9908
1998	1.599	1.847	1.382	0.185	1998	1.0001	1.0000	0.9930
1999	1.177	1.005	1.414	0.264	1999	1.0002	1.0000	0.9936
2000	1.143	0.833	1.312	0.102	2000	1.0002	1.0000	0.9948
2001	0.995	0.765	1.095	0.840	2001	1.0005	1.0000	0.9977
2002	0.856	0.796	1.090	0.600	2002	1.0009	1.0000	0.9988
2003	0.586	0.914	0.919	0.442	2003	1.0011	1.0000	0.9997
2004	0.798	0.930	0.940	0.472	2004	1.0011	1.0000	1.0004
2005	0.845	1.002	0.763	0.312	2005	1.0013	1.0000	1.0010
2006	0.851	1.029	0.751	0.086	2006	1.0010	1.0000	0.9983
2007	0.661	1.162	0.849	0.108	2007	1.0009	1.0000	0.9973
2008	0.716	1.725	1.057	(5.633)	2008	1.0015	1.0000	0.9998
2009	0.674	1.147	1.022	0.302	2009	1.0021	1.0000	1.1567
2010	0.551	1.228	1.087	0.451	2010	1.0022	1.0000	2.5238
2011	0.602	1.461	0.890	0.132	2011	1.0022	1.0000	1.9600
2012	0.602	1.695	0.776	0.203	2012	1.0023	1.0000	1.8812

Data source: KEWT database, 6.12/7.13, 1960/90–2010/11, and IFS-Taiwan, by 8 countries
 for four areas.

Table 7 Equilibrium test using the speed years for convergence and the valuation ratio by country

	17 Asia an	Euro area	15 Europe	1. Argentina		17 Asia an	Euro area	15 Europe	. Argentina
Speed years, 1/λ ⁺					$v^* = r^*/(r^* - g_Y)$				
1990	51.13		33.76	16.28	1990	3.654		(63.596)	0.881
1991	52.96		42.47	11.53	1991	3.297		3.589	0.955
1992	55.69		4.01	15.25	1992	3.577		(0.952)	0.987
1993	56.64		72.34	7.86	1993	4.592		2.313	1.279
1994	57.04		3.89	7.87	1994	7.011		(0.292)	1.483
1995	55.36		109.45	8.24	1995	9.749		4.117	1.701
1996	52.82		10.73	7.41	1996	22.195		5.601	2.215
1997	55.03		11.78	6.05	1997	6.250		1.771	3.014
1998	62.28		11.18	1.48	1998	13.654		1.786	4.451
1999	69.79	64.25	12.82	97.72	1999	(69.332)	3.620	1.485	2.399
2000	63.68	58.85	10.95	75.44	2000	(26.227)	4.489	1.572	2.690
2001	77.31	47.54	17.49	48.76	2001	(15.874)	20.475	1.345	2.312
2002	83.49	34.80	12.77	66.03	2002	(35.714)	7.109	1.464	1.591
2003	83.19	54.77	12.26	83.14	2003	(117.233)	7.786	1.421	1.907
2004	81.17	56.46	10.65	72.34	2004	27.205	6.068	1.583	2.574
2005	81.96	53.50	10.02	80.63	2005	84.689	7.122	1.695	2.234
2006	81.28	50.28	7.96	119.62	2006	20.829	9.862	2.591	1.946
2007	80.89	41.91	6.80	203.07	2007	7.470	15.844	3.420	2.040
2008	76.92	42.89	5.33	81.82	2008	(53.925)	(158.510)	8.024	1.869
2009	89.11	64.15	6.16	879.86	2009	(23.450)	3.476	1.968	1.472
2010	81.71	61.19	16.83	5.03	2010	(68.576)	3.557	3.192	1.572
2011	68.57	57.29	35.72	5.71	2011	(4.725)	4.360	2.616	1.663
2012	81.69	65.02	112.34	1.31	2012	(11.210)	3.199	3.695	1.743
	1. the US	1.Austria	1.Denmark	2.Bolivia		1. the US	1.Austria	1.Denmark	2.Bolivia
Speed years, 1/λ ⁺					$v^* = r^*/(r^* - g_Y)$				
1990	84.31	35.42	3.28	53.55	1990	1.294	27.599	2.555	1.140
1991	75.47	33.16	75.65	99.35	1991	1.350	(51.259)	2.373	1.297
1992	78.25	33.51	112.62	323.82	1992	1.297	18.723	2.120	1.351
1993	58.78	35.78	86.25	223.18	1993	1.669	16.534	1.780	1.335
1994	52.46	31.14	73.74	83.53	1994	1.900	(26.662)	1.794	1.208
1995	43.12	42.65	54.03	104.84	1995	2.963	4.357	2.429	1.242
1996	41.30	46.00	45.91	15.54	1996	3.397	3.704	2.264	1.289
1997	37.86	46.89	33.96	1.31	1997	4.815	4.589	2.871	1.526
1998	36.37	44.27	29.41	3.75	1998	5.745	4.121	4.040	2.065
1999	34.39	45.56	33.55	51.04	1999	6.518	13.419	2.228	1.515
2000	34.21	46.44	30.81	164.89	2000	5.464	11.712	2.261	1.479
2001	41.68	42.58	33.62	28.81	2001	2.647	(29.126)	2.023	1.310
2002	45.39	57.85	33.92	107.61	2002	2.148	3.970	2.272	1.355
2003	46.76	56.15	37.71	65.14	2003	1.998	5.495	2.039	1.160
2004	42.01	47.35	39.62	216.53	2004	2.301	5.767	2.172	1.254
2005	39.49	47.74	42.41	128.18	2005	2.503	5.855	1.950	1.194
2006	37.45	47.86	36.39	263.96	2006	2.806	3.782	2.264	1.145
2007	43.29	44.40	32.69	18.54	2007	2.224	2.993	3.087	1.191
2008	56.30	51.32	42.29	2.71	2008	1.632	2.568	2.485	1.275
2009	98.39	57.67	81.51	98.55	2009	1.246	3.894	1.629	1.395
2010	83.18	57.51	78.24	124.54	2010	1.326	3.557	1.642	1.349
2011	87.14	46.38	85.05	70.33	2011	1.295	5.333	1.548	1.479
2012	68.81	47.65	109.52	502.82	2012	1.380	4.751	1.395	1.332
	2. Canada	2.Belgium	2.Iceland	2.Brazil		2. Canada	2.Belgium	2.Iceland	2. Brazil
Speed years, 1/λ ⁺					$v^* = r^*/(r^* - g_Y)$				
1990	33.13	59.79	34.94	17.39	1990	(3.415)	1.672	4.811	(1.819)
1991	43.50	76.91	33.30	8.39	1991	7.337	1.385	4.070	1.675
1992	48.25	52.55	38.58	8.33	1992	3.699	2.127	2.753	1.686
1993	48.85	90.84	43.67	35.07	1993	3.926	1.413	2.668	25.632
1994	41.77	192.56	47.23	49.16	1994	461.648	1.144	2.507	5.008
1995	43.10	55.42	42.94	33.57	1995	89.270	1.501	2.957	(1.705)
1996	46.28	54.55	33.42	51.33	1996	14.956	1.748	6.130	(4.203)
1997	36.91	47.50	31.22	46.07	1997	(7.502)	1.748	9.910	(3.339)
1998	36.91	46.14	22.07	51.76	1998	(6.750)	1.732	(4.445)	(9.027)
1999	36.35	33.94	27.45	44.26	1999	(21.620)	2.806	9.026	(3.812)
2000	38.34	35.15	23.99	46.87	2000	4.706	3.069	14.769	(43.334)
2001	43.07	55.11	25.34	60.00	2001	5.807	3.386	(9.936)	3.823
2002	41.54	84.21	46.07	68.63	2002	10.434	2.117	2.670	2.548
2003	41.55	#NUM!	34.22	65.80	2003	10.368	1.074	3.677	2.567
2004	40.84	67.16	21.26	53.12	2004	7.534	2.633	(4.213)	3.696
2005	38.54	68.70	17.42	57.66	2005	8.872	3.373	(2.922)	2.846
2006	37.56	58.62	11.83	53.29	2006	20.040	3.606	(0.840)	3.060
2007	34.87	61.32	15.23	43.52	2007	(161.642)	3.397	(1.141)	4.514
2008	34.71	55.95	10.19	33.11	2008	(86.519)	8.391	(0.499)	16.571
2009	40.99	74.62	18.25	45.03	2009	(43.125)	3.354	(1.223)	3.018
2010	36.48	99.23	21.07	33.55	2010	(6.150)	2.051	(1.320)	8.264
2011	34.82	71.14	22.98	30.04	2011	(4.349)	3.453	(1.573)	10.899
2012	25.40	72.70	22.16	34.85	2012	(3.498)	3.117	(1.265)	2.672

Data source: KEWT database, 6.12/7.13, 1960/90–2010/11, by 12 countries for four areas.

Hideyuki Kamiryō: Two Supplemental Proofs such that the Real Rate of Profits/Returns Equals
 ever Zero, actually and endogenously, under the Money-Neutral

Table 8 Equilibrium test using the speed years for convergence and the valuation ratio by
 country

	17 Asia ar	Euro area	15 Europe	1. Argentina		17 Asia ar	Euro area	15 Europe	Argentina
Speed years, 1/λ *					$v^* = r^* / (r^* - g_V^*)$				
1990	51.13		33.76	16.28	1990	3.654		(63.596)	0.881
1991	52.96		42.47	11.53	1991	3.297		3.589	0.955
1992	55.69		4.01	15.25	1992	3.577		(0.952)	0.987
1993	56.64		72.34	7.86	1993	4.592		2.313	1.279
1994	57.04		3.89	7.87	1994	7.011		(0.292)	1.483
1995	55.36		109.45	8.24	1995	9.749		4.117	1.701
1996	52.82		10.73	7.41	1996	22.195		5.601	2.215
1997	55.03		11.78	6.05	1997	6.250		1.771	3.014
1998	62.28		11.18	1.48	1998	13.654		1.786	4.451
1999	69.79	64.25	12.82	97.72	1999	(69.332)	3.620	1.485	2.399
2000	63.68	58.85	10.95	75.44	2000	(26.227)	4.489	1.572	2.690
2001	77.31	47.54	17.49	48.76	2001	(15.874)	20.475	1.345	2.312
2002	83.49	34.80	12.77	66.03	2002	(35.214)	7.109	1.464	1.591
2003	83.19	54.77	12.26	83.14	2003	(117.233)	7.786	1.421	1.907
2004	81.17	56.46	10.65	72.34	2004	27.205	6.068	1.583	2.574
2005	81.96	53.50	10.02	80.63	2005	84.689	7.122	1.695	2.234
2006	81.28	50.28	7.96	119.62	2006	20.829	9.862	2.591	1.946
2007	80.89	41.91	6.80	203.07	2007	7.470	15.844	3.420	2.040
2008	76.92	42.89	5.33	81.82	2008	(53.925)	(158.510)	8.024	1.869
2009	89.11	64.15	6.16	879.86	2009	(23.450)	3.476	1.968	1.472
2010	81.71	61.19	16.83	5.03	2010	(68.576)	3.557	3.192	1.572
2011	68.57	57.29	35.72	5.71	2011	(4.725)	4.360	2.616	1.663
2012	81.69	65.02	112.34	1.31	2012	(11.210)	3.199	3.695	1.743
	1. the US	1.Austria	1.Denmark	2.Bolivia		1. the US	1.Austria	1.Denmark	2.Bolivia
Speed years, 1/λ *					$v^* = r^* / (r^* - g_V^*)$				
1990	84.31	35.42	3.28	53.55	1990	1.294	27.599	2.555	1.140
1991	75.47	33.16	75.65	99.35	1991	1.350	(51.259)	2.373	1.297
1992	78.25	33.51	112.62	323.82	1992	1.297	18.723	2.120	1.351
1993	58.78	35.78	86.25	223.18	1993	1.669	16.534	1.780	1.335
1994	52.46	31.14	73.74	83.53	1994	1.900	(26.662)	1.794	1.208
1995	43.12	42.65	54.03	104.84	1995	2.963	4.357	2.429	1.242
1996	41.30	46.00	45.91	15.54	1996	3.397	3.704	2.264	1.289
1997	37.86	46.89	33.96	1.31	1997	4.815	4.589	2.871	1.526
1998	36.37	44.27	29.41	3.75	1998	5.745	4.112	4.040	2.065
1999	34.39	45.56	33.55	51.04	1999	6.518	13.419	2.238	1.515
2000	34.21	46.44	30.81	164.89	2000	5.464	11.712	2.261	1.479
2001	41.68	42.58	33.62	28.81	2001	2.647	(29.126)	2.023	1.310
2002	45.39	57.85	33.92	107.61	2002	2.148	3.970	2.272	1.355
2003	46.76	56.15	37.71	65.14	2003	1.998	5.495	2.039	1.160
2004	42.01	47.35	39.62	216.53	2004	2.301	5.767	2.172	1.254
2005	39.49	47.74	42.41	128.18	2005	2.503	5.855	1.950	1.194
2006	37.45	47.86	36.39	263.96	2006	2.806	3.782	2.264	1.145
2007	43.29	44.40	32.69	18.54	2007	2.224	2.993	3.087	1.191
2008	56.30	51.32	42.29	2.71	2008	1.632	2.568	2.485	1.275
2009	98.39	57.67	81.51	98.55	2009	1.246	3.894	1.629	1.395
2010	83.18	57.51	78.24	124.54	2010	1.326	3.557	1.642	1.349
2011	87.14	46.38	85.05	70.33	2011	1.295	5.333	1.548	1.479
2012	68.81	47.65	109.52	502.82	2012	1.380	4.751	1.395	1.332
	2. Canada	2.Belgium	2.Iceland	2.Brazil		2. Canada	2.Belgium	2.Iceland	2.Brazil
Speed years, 1/λ *					$v^* = r^* / (r^* - g_V^*)$				
1990	33.13	59.79	34.94	17.39	1990	(3.415)	1.672	4.811	(1.819)
1991	43.50	76.91	33.30	8.39	1991	7.337	1.385	4.070	1.675
1992	48.25	52.55	38.58	8.33	1992	3.699	2.127	2.753	1.686
1993	48.85	90.84	43.67	35.07	1993	3.926	1.413	2.668	25.632
1994	41.77	192.56	47.23	49.16	1994	461.648	1.144	2.507	5.008
1995	43.10	55.42	42.94	33.57	1995	89.270	1.501	2.957	(1.705)
1996	46.28	54.55	33.42	51.33	1996	14.956	1.748	6.130	(4.203)
1997	36.91	47.50	31.22	46.07	1997	(7.502)	1.748	9.910	(3.339)
1998	36.91	46.14	22.07	51.76	1998	(6.750)	1.732	(4.445)	(9.027)
1999	36.35	33.94	27.45	44.26	1999	(21.620)	2.806	9.026	(3.812)
2000	38.34	35.15	23.99	46.87	2000	4.706	3.069	14.769	(43.334)
2001	43.07	55.11	25.34	60.00	2001	5.807	3.386	(9.936)	3.823
2002	41.54	84.21	46.07	68.63	2002	10.434	2.117	2.670	2.548
2003	41.55	#NUM!	34.22	65.80	2003	10.368	1.074	3.677	2.567
2004	40.84	67.16	21.26	53.12	2004	7.534	2.623	(4.213)	3.696
2005	38.54	68.70	17.42	57.66	2005	8.872	3.373	(2.922)	2.846
2006	37.56	58.62	11.83	53.29	2006	20.040	3.606	(0.840)	3.060
2007	34.87	61.32	15.23	43.52	2007	(161.642)	3.397	(1.141)	4.514
2008	34.71	55.95	10.19	33.11	2008	(86.519)	8.391	(0.499)	16.571
2009	40.99	74.62	18.25	45.03	2009	(43.125)	3.354	(1.223)	3.018
2010	36.48	99.23	21.07	33.55	2010	(6.150)	2.051	(1.320)	8.264
2011	34.82	71.14	22.98	30.04	2011	(4.349)	3.453	(1.573)	10.899
2012	25.40	72.70	22.16	34.85	2012	(3.498)	3.117	(1.265)	2.672

Data source: KEWT, 6.12/7.13, 1960/90–2010/11, by 12 countries for four areas.

Table 9 Equilibrium test using the speed years for convergence and the valuation ratio by country

	6. Banglad	6. Greece	6. the UK	7. Peru		6. Banglad	6. Greece	6. the UK	7. Peru
Speed years, 1/λ*					v [*] =r [*] /(r [*] -g [*] v)				
1990	37.89	31.28	55.20	326.42	1990	1.991	2.332	1.589	4.332
1991	37.14	31.84	246.56	36.53	1991	2.361	2.733	1.241	2.618
1992	41.46	36.10	1789.46	90.82	1992	1.798	2.196	1.119	1.878
1993	44.61	44.77	1489.10	3.72	1993	1.462	1.772	1.110	2.152
1994	41.36	50.07	379.95	4.40	1994	1.550	1.675	1.126	3.871
1995	45.21	48.00	43.03	0.97	1995	1.710	1.496	1.393	40.239
1996	38.33	74.80	58.96	0.86	1996	2.961	1.519	1.360	5.006
1997	35.41	36.20	72.33	15.87	1997	3.203	98.230	1.419	60.480
1998	34.19	21.67	62.69	974.80	1998	4.619	(14.195)	1.394	21.145
1999	35.13	17.19	115.07	49.48	1999	5.632	(6.270)	1.460	6.702
2000	44.84	33.42	507.90	42.61	2000	2.296	1.956	1.394	4.711
2001	26.72	38.64	438.43	41.36	2001	1.017	(0.708)	1.290	2.988
2002	67.94	36.86	404.15	39.71	2002	1.209	(0.659)	1.189	3.365
2003	53.12	33.45	472.84	38.84	2003	3.576	(0.885)	1.169	3.721
2004	50.26	62.55	504.26	44.61	2004	4.128	138.063	1.177	2.701
2005	41.66	65.23	390.64	47.88	2005	7.272	9.872	1.152	2.056
2006	46.41	48.57	567.20	51.67	2006	4.158	(3.849)	1.259	1.554
2007	50.21	43.72	411.04	41.56	2007	3.787	(3.694)	1.289	1.722
2008	58.17	50.09	218.55	26.70	2008	3.682	9.340	1.142	3.100
2009	73.51	84.57	200.13	34.21	2009	2.639	1.963	1.047	2.900
2010	91.44	89.40	183.24	28.45	2010	2.338	2.051	1.101	2.438
2011	116.04	109.61	96.66	21.39	2011	3.066	1.801	1.090	3.146
2012	137.03	275.83	112.32	25.34	2012	3.748	1.242	1.116	2.481
	7. China	7. Ireland	1. Bulgaria	8. Iran		7. China	7. Ireland	1. Bulgaria	8. Iran
Speed years, 1/λ*					v [*] =r [*] /(r [*] -g [*] v)				
1990	22.17	16.81	0.00	14.53	1990	5.894	(5.394)	0.000	(3.634)
1991	21.76	20.57	0.00	12.74	1991	5.579	(3.178)	0.000	(4.461)
1992	19.59	24.27	0.00	17.64	1992	7.047	(4.241)	0.000	4.849
1993	17.13	26.19	0.00	22.72	1993	11.793	13.974	0.000	3.192
1994	18.22	25.98	0.00	58.80	1994	5.180	23.001	0.000	1.399
1995	18.97	24.72	6.02	19.71	1995	4.784	4.243	1.764	2.403
1996	19.38	24.74	9.07	49.24	1996	4.694	3.334	1.416	2.370
1997	22.05	25.52	39.64	24.65	1997	3.282	2.474	1.018	3.175
1998	22.75	24.31	12.46	20.83	1998	3.349	2.636	1.160	4.772
1999	21.71	56.53	12.70	30.73	1999	4.252	3.851	1.154	2.219
2000	21.24	53.35	11.32	30.73	2000	5.057	2.938	1.272	2.427
2001	20.87	49.76	9.62	21.85	2001	5.343	2.955	1.465	3.063
2002	21.01	48.24	20.10	22.48	2002	5.167	2.865	1.163	3.184
2003	20.33	49.46	12.11	18.60	2003	5.542	2.650	1.297	4.235
2004	20.29	47.42	9.31	18.39	2004	5.145	2.751	1.940	4.193
2005	22.31	45.00	5.09	23.59	2005	3.751	3.040	2.220	2.450
2006	23.95	41.47	8.52	23.57	2006	3.137	3.521	4.108	2.434
2007	24.47	37.84	44.63	25.94	2007	2.879	5.162	2.775	2.205
2008	23.82	38.17	10.24	22.29	2008	3.080	(16.926)	(1.770)	2.643
2009	22.11	50.00	12.35	19.32	2009	4.163	17.569	(1.802)	3.712
2010	22.12	62.44	15.75	20.90	2010	4.393	3.901	(7.948)	3.166
2011	21.05	62.40	18.80	#DIV/0!	2011	5.603	2.950	(4.755)	#DIV/0!
2012	21.84	76.31	19.67	#DIV/0!	2012	5.309	2.049	(4.003)	#DIV/0!
	8. India	8. Italy	2. Czech R	9. Kazakhstan		8. India	8. Italy	2. Czech R	9. Kazakhstan
Speed years, 1/λ*					v [*] =r [*] /(r [*] -g [*] v)				
1990	27.61	27.98	0.00		1990	(4.324)	7.162		
1991	29.61	4.27	0.00		1991	(10.307)	4.251		
1992	25.19	34.02	0.00		1992	(5.273)	3.099		
1993	26.63	49.24	0.00		1993	(9.965)	2.058		
1994	23.60	45.80	0.00		1994	(18.637)	2.149		
1995	21.58	31.04	2.70	21.17	1995	(20.925)	2.842	1.536	(264.652)
1996	21.42	39.58	0.11	9.98	1996	(6.500)	2.244	2.108	1.715
1997	21.04	26.71	23.60	6.73	1997	(9.575)	2.176	4.685	1.453
1998	22.85	36.15	25.24	6.12	1998	(5.559)	2.284	8.832	1.261
1999	23.04	49.44	22.03	16.69	1999	(7.030)	1.713	3.555	1.540
2000	23.37	42.73	18.47	24.81	2000	(12.085)	1.836	3.679	1.343
2001	23.92	46.84	17.29	4.15	2001	(15.266)	2.112	4.927	4.989
2002	22.49	46.58	15.79	19.69	2002	45.158	2.299	(4.067)	6.150
2003	21.47	49.78	16.41	23.48	2003	11.577	1.958	(8.340)	3.512
2004	19.06	11.27	17.89	26.43	2004	5.752	1.478	36.937	2.930
2005	18.69	25.76	22.51	21.11	2005	7.265	3.220	3.835	3.973
2006	17.90	42.15	22.99	19.38	2006	9.124	2.464	3.541	4.298
2007	17.39	43.28	23.24	15.04	2007	11.866	2.501	3.515	12.841
2008	17.36	47.72	25.91	21.22	2008	25.852	2.055	3.793	2.936
2009	17.51	82.93	27.56	17.17	2009	38.798	1.341	9.467	12.299
2010	17.97	60.46	26.19	18.74	2010	13.527	1.536	39.406	4.036
2011	17.18	69.24	26.61	26.09	2011	31.784	1.426	37.554	2.118
2012	17.46	106.72	27.80	16.20	2012	32.015	1.266	73.217	8.491

Data source: KEWT, 6.12/7.13, 1960/90–2010/11, by 12 countries for four areas.

Table 10 Equilibrium test using the speed years for convergence and the valuation ratio by
 country

	9.Indonesia	9.Luxemb	3.Hungary	10.Kuwait		9.Indonesia	9.Luxemb	3.Hungary	10.Kuwait
Speed years, $1/\lambda^*$					$v^*=r'/(r^*-g_Y^*)$				
1990	23.87		25.60	7.02	1990	2.495		2.462	0.740
1991	23.04		50.81	4.17	1991	2.593		1.835	(0.303)
1992	26.71		7.55	0.45	1992	2.292		2.078	0.355
1993	23.12		51.68	6.02	1993	2.716		1.256	0.712
1994	22.35		2.53	8.85	1994	2.934		1.541	1.112
1995	19.48	99.58	0.85	10.86	1995	4.853	1.261	2.139	0.756
1996	20.09	74.25	15.64	17.80	1996	4.515	1.390	1.780	0.790
1997	20.61	41.92	12.88	87.92	1997	3.534	2.181	1.977	0.728
1998	32.81	36.29	11.16	2.27	1998	2.332	2.581	2.703	0.670
1999	40.37	30.33	10.89	0.88	1999	3.445	2.312	2.744	0.707
2000	21.88	31.98	7.97	12.51	2000	2.059	2.023	4.345	0.654
2001	41.46	18.75	13.27	2.35	2001	1.673	(225.057)	2.069	0.801
2002	33.57	16.90	11.12	4.52	2002	2.385	(5.581)	2.590	1.150
2003	36.25	17.26	7.06	9.33	2003	2.681	(8.361)	1.416	1.128
2004	38.62	24.84	6.53	14.48	2004	2.375	5.376	1.735	1.074
2005	26.82	24.77	1.76	27.97	2005	3.367	4.556	1.422	1.015
2006	30.05	23.04	0.63	11.82	2006	2.463	5.615	3.683	0.961
2007	27.50	28.28	118.99	205.82	2007	2.924	3.009	2.688	1.030
2008	25.40	25.84	34.40	105.42	2008	2.733	5.037	3.105	1.037
2009	25.04	20.60	41.15	79.70	2009	2.405	(5.583)	1.708	1.083
2010	21.98	22.69	49.62	98.00	2010	2.769	(19.121)	1.462	1.103
2011	20.43	25.66	57.87	75.13	2011	3.104	23.451	1.498	1.007
2012	18.21	25.85	56.23	68.86	2012	4.431	(541.396)	1.513	1.043
	10. Japan	10.Nether	4. Latvia	11. Pakistan		10. Japan	10.Nether	4. Latvia	11. Pakistan
Speed years, $1/\lambda^*$					$v^*=r'/(r^*-g_Y^*)$				
1990	45.97	39.62	0.00	73.68	1990	24.185	2.663	0.000	1.306
1991	48.42	40.78	0.00	33.97	1991	10.103	2.787	0.000	1.703
1992	59.63	41.22	0.00	5.42	1992	2.988	3.224	0.000	2.092
1993	60.60	46.97	0.00	12.79	1993	3.532	2.682	0.000	1.915
1994	61.54	43.79	0.00	13.21	1994	4.682	2.469	0.000	2.120
1995	59.57	46.53	25.50	19.53	1995	5.744	2.187	1.228	1.719
1996	59.08	44.79	34.12	13.98	1996	7.604	2.370	1.495	1.765
1997	61.95	44.34	29.97	37.23	1997	4.247	2.254	2.301	1.593
1998	72.35	42.31	20.89	35.04	1998	6.226	2.031	4.032	2.033
1999	80.16	44.70	24.71	382.70	1999	14.747	2.647	3.539	1.460
2000	76.82	53.73	21.61	7.96	2000	16.777	1.929	22.112	1.843
2001	87.22	46.41	20.08	23.44	2001	121.377	2.112	(4.501)	1.481
2002	106.65	57.92	18.32	49.63	2002	11.928	1.980	(5.578)	1.542
2003	136.11	62.06	(16.35)	215.15	2003	9.004	1.978	(3.329)	1.328
2004	111.30	84.18	12.99	49.51	2004	6.594	1.519	(1.038)	1.379
2005	118.15	61.67	11.62	3.28	2005	6.134	1.698	(0.937)	1.490
2006	118.71	72.65	9.79	0.15	2006	4.746	1.492	(0.635)	1.716
2007	127.72	59.11	9.18	1.71	2007	3.623	1.574	(0.595)	2.024
2008	126.35	40.50	12.14	7.82	2008	5.417	2.113	(0.965)	1.465
2009	207.34	44.05	71.20	19.31	2009	2.114	3.106	1.248	1.209
2010	192.79	56.11	39.83	91.66	2010	2.328	2.131	3.800	1.071
2011	209.27	72.65	46.84	122.35	2011	1.955	1.561	4.488	0.995
2012	357.47	74.50	47.91	216.02	2012	1.511	1.589	4.620	0.983
	11. Korea	11.Portug	5. Poland	12.Saudi Arabia		11. Korea	11.Portug	5. Poland	12.SaudiA
Speed years, $1/\lambda^*$					$v^*=r'/(r^*-g_Y^*)$				
1990	20.53	18.17	36.53	37.40	1990	22.995	(6.711)	1.619	1.463
1991	18.61	22.70	53.10	17.19	1991	(108.126)	4.082	2.235	22.851
1992	19.98	22.12	0.06	28.74	1992	23.539	6.201	1.617	2.496
1993	21.28	28.65	13.53	25.95	1993	9.942	2.790	1.475	3.549
1994	20.15	32.00	12.84	36.24	1994	15.198	2.416	1.714	1.680
1995	9.95	28.55	16.48	26.50	1995	(1.144)	4.571	1.396	1.633
1996	18.51	27.52	14.99	30.00	1996	(33.421)	3.883	1.361	1.425
1997	20.77	24.91	11.47	28.32	1997	15.246	7.019	1.591	1.456
1998	38.55	24.76	10.17	30.48	1998	2.075	5.691	1.969	3.812
1999	38.08	35.49	9.79	36.90	1999	1.886	(1.944)	2.020	1.710
2000	30.65	44.21	9.45	42.13	2000	2.460	15.713	1.893	1.411
2001	30.08	45.07	12.31	33.57	2001	2.911	5.919	1.380	1.523
2002	29.01	52.26	11.50	29.66	2002	3.279	4.711	1.195	1.566
2003	30.40	60.89	10.71	30.35	2003	2.621	2.211	1.227	1.453
2004	34.40	66.57	10.36	34.22	2004	2.059	2.081	1.382	1.355
2005	31.45	51.47	12.42	43.95	2005	2.575	3.302	1.360	1.269
2006	30.28	49.34	7.32	49.53	2006	3.291	3.753	1.607	1.280
2007	30.64	47.00	0.26	45.29	2007	3.279	4.765	5.680	1.397
2008	27.45	48.13	655.34	57.94	2008	6.319	3.100	9.675	1.350
2009	37.72	66.48	47.63	26.67	2009	2.710	2.017	2.848	2.151
2010	32.49	67.17	32.95	32.91	2010	2.630	1.955	3.302	1.735
2011	32.16	91.20	29.26	48.04	2011	2.894	1.656	3.739	1.390
2012	36.09	260.57	28.07	47.28	2012	2.724	1.163	4.169	1.395

Data source: KEWT database, 6.12/7.13, 1960/90–2010/11, by 12 countries for four areas.

Table 11 Equilibrium test using the speed years for convergence and the valuation ratio by country

12.Malays		12.Slovak		6.Romania		13.Algeria		12.Malays		12.Slovak		6.Romania		13.Algeria	
Speed years, 1/λ *								v [*] =r [*] /(r [*] -g [*])							
1990	20.38			0.00	22.73			1990	(34.682)			0.000	13.695		
1991	16.78			0.00	22.21			1991	(3.684)			0.000	3.022		
1992	18.83			0.00	21.74			1992	(10.863)			0.000	3.759		
1993	17.93			0.00	22.02			1993	(9.286)			0.000	5.273		
1994	17.33			0.00	18.95			1994	(6.425)			0.000	18.471		
1995	16.68	29.33	23.27	19.97	19.97			1995	(4.590)	4.016	(1.741)		7.616		
1996	18.97	15.73	17.48	32.54	32.54			1996	(27.992)	(1.243)	(6.489)		2.025		
1997	18.84	16.08	18.93	34.74	34.74			1997	(15.454)	(1.629)	2.260		1.849		
1998	36.31	16.22	16.07	23.67	23.67			1998	2.187	(1.169)	1.946		3.731		
1999	39.50	20.11	18.79	27.24	27.24			1999	1.991	(3.858)	1.774		2.376		
2000	30.40	22.46	14.37	46.33	46.33			2000	2.858	(9.157)	1.421		1.427		
2001	31.07	17.81	10.93	22.19	22.19			2001	3.121	(1.813)	1.634		1.942		
2002	32.90	18.45	10.61	25.60	25.60			2002	2.848	(2.022)	1.725		2.205		
2003	37.76	24.46	10.27	29.11	29.11			2003	2.203	(14.669)	1.878		1.889		
2004	37.29	21.89	10.35	27.99	27.99			2004	2.099	(8.293)	2.052		1.974		
2005	43.72	19.19	10.11	38.73	38.73			2005	1.754	(4.225)	2.294		1.611		
2006	45.71	20.13	7.68	43.97	43.97			2006	1.649	(5.202)	4.938		1.518		
2007	42.86	21.92	4.90	36.01	36.01			2007	1.700	8.004	(13.870)		1.732		
2008	44.48	21.07	1.73	32.39	32.39			2008	1.583	(388.148)	(8.166)		1.905		
2009	63.29	136.27	21.81	18.20	18.20			2009	1.395	11.143	8.729		9.012		
2010	39.75	110.45	15.77	54.03	54.03			2010	1.884	(13.966)	(9.582)		1.789		
2011	34.47	97.35	17.45	24.92	24.92			2011	2.035	(5.077)	(5.164)		2.623		
2012	14.80	1059.25	17.87	#DIV/0!	#DIV/0!			2012	(3.078)	4.305	(4.020)		#DIV/0!		
13.Philippi		13.Sloveni		7. Russia		14. Egypt		13.Philippi		13.Sloveni		7. Russia		14. Egypt	
Speed years, 1/λ *								v [*] =r [*] /(r [*] -g [*])							
1990	1.39				12.88			1990	7.336				(7.679)		
1991	61.84				105.20			1991	2.228				4.089		
1992	52.73				57.11			1992	1.706				2.918		
1993	26.54				119.87			1993	1.756				3.662		
1994	46.04				173.56			1994	1.749				2.499		
1995	9.92	44.61	9.31	15.33	15.33			1995	1.761	3.331	(1.149)		4.673		
1996	95.62	39.28	10.18	145.58	145.58			1996	1.856	3.349	(1.418)		1.578		
1997	65.74	25.08	18.99	151.37	151.37			1997	1.952	14.127	(0.846)		2.801		
1998	35.01	22.64	39.00	16.53	1998			1.282	24.325	(188.513)			2.541		
1999	61.01	19.53	30.26	51.79	1999			1.015	(6.395)	1.346			2.198		
2000	76.78	19.81	11.60	53.64	2000			1.004	(8.402)	1.157			1.790		
2001	355.27	23.54	9.33	15.59	2001			1.292	11.586	1.310			2.475		
2002	503.09	24.82	11.91	52.95	2002			1.292	5.301	1.321			1.692		
2003	0.94	22.27	10.93	57.61	2003			1.988	11.568	1.341			1.614		
2004	2.32	20.04	10.69	66.09	2004			1.733	20.216	1.325			1.724		
2005	3.48	21.80	11.15	68.05	2005			1.710	8.983	1.284			1.911		
2006	5.42	21.30	9.18	83.81	2006			1.440	7.421	1.343			2.321		
2007	11.10	21.79	6.50	636.75	2007			1.343	3.423	1.578			2.727		
2008	96.11	18.09	5.34	108.78	2008			1.229	6.352	1.616			3.749		
2009	29.36	25.95	8.40	880.46	2009			0.827	8.603	1.511			1.600		
2010	533.58	28.80	2.86	129.34	2010			0.939	17.923	1.385			1.827		
2011	86.55	42.24	11.29	#DIV/0!	#DIV/0!			0.998	3.208	1.426			#DIV/0!		
2012	71.30	48.55	17.55	#DIV/0!	#DIV/0!			0.942	2.774	1.385			#DIV/0!		
14.Singap		14. Spain		8. Turkey		15. Kenya		14.Singap		14. Spain		8. Turkey		15. Kenya	
Speed years, 1/λ *								v [*] =r [*] /(r [*] -g [*])							
1990	26.10	21.05	12.84	0.49	1990			2.937	(4.876)	3.367			(5.857)		
1991	26.46	21.87	4.38	13.00	1991			2.512	(5.762)	3.501			(1.411)		
1992	29.24	24.91	4.99	16.82	1992			2.348	(31.357)	2.985			3.186		
1993	24.12	33.83	5.29	11.61	1993			3.283	4.678	3.577			(2.540)		
1994	31.99	34.95	7.85	21.55	1994			1.910	4.252	1.642			(7.791)		
1995	31.71	29.87	6.71	11.17	1995			1.977	7.453	1.897			2.306		
1996	29.02	30.52	5.61	51.52	1996			2.238	6.271	2.698			1.208		
1997	30.24	29.62	6.19	62.24	1997			2.174	6.004	2.342			1.188		
1998	42.26	27.19	7.12	45.37	1998			1.653	10.700	1.489			1.126		
1999	35.31	26.44	8.94	54.21	1999			1.991	(8.828)	1.322			1.087		
2000	27.43	24.32	8.03	83.09	2000			2.903	(4.216)	1.526			1.187		
2001	36.85	25.47	358.36	190.40	2001			2.275	(4.737)	1.058			1.196		
2002	37.37	25.46	10.70	54.80	2002			2.364	(5.492)	1.318			1.071		
2003	53.55	24.75	10.68	51.87	2003			1.374	(5.475)	1.288			1.063		
2004	34.16	23.42	9.12	82.59	2004			2.035	(2.863)	1.443			1.170		
2005	39.78	22.06	8.60	170.46	2005			1.703	(2.253)	1.557			1.231		
2006	46.56	20.74	7.25	438.41	2006			1.502	(1.992)	1.996			1.267		
2007	45.91	20.78	6.86	5.20	2007			1.462	(1.827)	1.844			26.737		
2008	31.56	23.30	5.83	64.35	2008			2.162	(1.815)	2.372			(3.984)		
2009	36.19	34.06	13.14	43.31	2009			1.928	(4.204)	1.262			(3.936)		
2010	52.13	38.27	1.22	24.17	2010			1.391	(5.818)	1.612			(3.843)		
2011	48.73	43.74	1.79	18.15	2011			1.468	(27.732)	1.526			(1.576)		
2012	37.45	52.06	1.87	15.68	2012			1.824	9.206	2.058			(1.459)		

Data source: KEWT, 6.12/7.13, 1960/90–2010/11, by 12 countries for four areas.

Table 12 Equilibrium test using the speed years for convergence and the valuation ratio by
 country

	15.Sri Lan	Taiwan	9. Ukraine	16.Morocco	15.Sri Lan	Taiwan	9. Ukraine	16.Morocco
Speed years, $1/\lambda^*$					$v^*=r^*/(r^*-g_v^*)$			
1990	22.31	42.77		41.76	1990	(16.12)	2.54	2.68
1991	24.30	40.06		54.27	1991	6.20	2.64	1.71
1992	20.81	34.33		60.66	1992	(11.32)	3.34	1.49
1993	20.10	33.37	2189.72	59.80	1993	(4.29)	3.21	7.41
1994	15.25	33.03	289.23	60.60	1994	(1.99)	3.40	1.94
1995	20.10	32.55	1.66	76.21	1995	(6.25)	3.36	1.67
1996	21.42	35.43	2.33	76.36	1996	(10.65)	2.88	1.78
1997	12.80	33.02	50.35	63.26	1997	(0.99)	3.50	2.01
1998	19.37	31.18	41.95	7.22	1998	(3.53)	4.13	3.10
1999	17.21	33.96	32.69	33.47	1999	(1.99)	3.19	1.93
2000	16.76	33.38	13.40	35.25	2000	(2.14)	3.21	1.98
2001	26.42	46.06	8.69	43.69	2001	15.48	2.62	2.71
2002	25.57	50.02	15.03	40.64	2002	17.79	2.07	1.92
2003	27.75	48.95	9.94	36.96	2003	8.10	2.08	2.22
2004	21.82	37.85	3.06	33.71	2004	(8.25)	2.77	1.45
2005	18.97	40.25	10.33	37.56	2005	(2.84)	2.62	2.60
2006	17.75	44.00	8.10	36.72	2006	(2.91)	2.11	6.78
2007	17.74	48.45	5.88	30.56	2007	(2.87)	1.81	17.84
2008	18.80	43.48	5.99	20.83	2008	(116.31)	2.51	(13.77)
2009	21.67	63.16	26.22	21.42	2009	(7.44)	1.86	1.76
2010	17.63	47.60	12.34	20.90	2010	(2.32)	1.92	1.69
2011	16.66	48.62	7.80	20.05	2011	(3.73)	1.91	2.63
2012	14.88	50.08	3.77	18.69	2012	(1.76)	1.93	0.66
	16.Thailan	17.Vietnar	18.S.Africa	17.Nigeria	16.Thailan	17.Vietnar	18.S.Africa	17.Nigeria
Speed years, $1/\lambda^*$					$v^*=r^*/(r^*-g_v^*)$			
1990	19.56	56.56	15.27		1990	(3.31)	1.33	3.04
1991	19.23	35.26	42.47		1991	(3.98)	1.77	1.58
1992	20.18	34.83	59.14		1992	(5.49)	2.48	1.42
1993	20.36	24.48	99.27		1993	(6.45)	(3.92)	1.72
1994	19.47	27.42	348.53		1994	(5.74)	(4.21)	1.98
1995	18.15	36.36	417.48	6.76	1995	(4.11)	(4.81)	3.52
1996	18.56	25.64	553.32	2.91	1996	(3.79)	(3.60)	2.62
1997	24.43	20.50	37.19	8.25	1997	(21.74)	(2.17)	2.03
1998	54.62	18.14	275.64	733.77	1998	1.95	(2.16)	2.44
1999	52.72	22.43	609.51	5804.31	1999	2.21	5.12	2.23
2000	42.88	19.87	108.00	56.18	2000	3.00	7.02	2.22
2001	39.59	18.74	335.01	8.24	2001	4.03	9.24	2.30
2002	39.30	16.54	84.95	8.61	2002	3.93	(29.84)	2.31
2003	37.33	15.21	385.57	10.56	2003	4.05	(5.74)	2.50
2004	32.43	15.20	604.59	9.29	2004	6.02	(6.00)	3.50
2005	24.41	15.84	205.71	84.47	2005	(9.85)	(78.20)	2.75
2006	26.58	16.07	145.23	9.06	2006	21.78	(14.38)	3.43
2007	31.49	11.51	65.96	100.68	2007	4.07	(1.73)	35.82
2008	25.39	11.93	35.71	92.85	2008	34.53	(1.77)	(8.57)
2009	41.68	14.12	39.10	12.86	2009	2.73	(2.73)	4.81
2010	30.34	12.88	36.93	10.97	2010	5.13	(2.91)	6.34
2011	28.90	13.51	37.15	3.37	2011	8.98	(2.69)	35.09
2012	25.30	14.74	36.99	1.05	2012	(23.79)	(2.40)	6.91

Data source: KEWT database, 6.12/7.13, 1960/90–2010/11, and Taiwan IFS, by 12 countries
 for four areas.

Table S-1 The speed years by country and by sector (Total, Government, and Private sectors)

Table S-1	$1/\lambda_{US}^+$	$1/\lambda_G^+$	$1/\lambda_{PRI}^+$	$1/\lambda_{CA}^+$	$1/\lambda_G^+$	$1/\lambda_{PRI}^+$	$1/\lambda_{MX}^+$	$1/\lambda_G^+$	$1/\lambda_{PRI}^+$
	the U S			Canada			Mexico		
1990	84.31	59.46	96.98	33.13	29.71	35.11	31.29	14.98	35.93
1991	75.47	43.72	89.00	43.50	45.77	46.61	35.21	39.30	35.17
1992	78.25	46.36	91.51	48.25	49.41	52.35	38.23	62.93	34.09
1993	58.78	43.26	68.96	48.85	44.98	53.53	26.55	25.38	27.15
1994	52.46	41.46	61.69	41.77	44.68	43.89	25.20	23.62	25.84
1995	43.12	37.79	50.16	43.10	33.79	46.72	30.24	19.15	36.26
1996	41.30	46.46	44.61	46.28	41.02	48.68	44.05	20.57	95.45
1997	37.86	45.72	39.07	36.91	45.47	36.05	46.13	16.82	218.96
1998	36.37	40.37	37.94	36.91	67.30	33.62	38.18	15.53	98.71
1999	34.39	53.27	32.25	36.35	81.69	32.05	38.97	15.32	92.78
2000	34.21	73.82	29.37	38.34	93.88	33.37	35.24	15.89	76.09
2001	41.68	61.66	38.98	43.07	36.85	46.65	18.85	15.83	19.54
2002	45.39	23.82	65.60	41.54	46.71	41.37	32.03	15.02	54.85
2003	46.76	18.04	86.40	41.55	42.21	42.39	29.65	17.22	65.70
2004	42.01	31.58	49.02	40.84	91.99	35.83	33.67	16.63	89.58
2005	39.49	34.78	43.72	38.54	70.69	34.79	24.24	17.43	43.06
2006	37.45	39.31	39.21	37.56	75.46	33.24	21.72	16.22	35.63
2007	43.29	25.98	57.79	34.87	66.24	31.44	20.67	17.62	27.99
2008	56.30	16.49	103.75	34.71	31.17	37.12	20.05	17.22	25.20
2009	98.39	9.51	25.69	40.99	18.52	56.41	23.34	18.34	28.46
2010	83.18	11.56	25.31	36.48	16.73	49.17	23.70	17.47	29.88
2011	87.14	12.85	27.87	34.82	23.44	39.49	22.64	17.55	28.15
2012	68.81	14.40	109.16	25.40	18.40	28.26	23.23	18.35	28.89
	China			Japan			Korea		
1990	22.17	20.51	23.17	45.97	43.60	44.44	20.53	22.43	20.28
1991	21.76	19.18	23.16	48.42	40.87	51.29	18.61	16.99	18.93
1992	19.59	20.73	20.34	59.63	43.01	66.40	19.98	24.06	19.52
1993	17.13	21.98	17.59	60.60	44.69	67.32	21.28	34.14	20.11
1994	18.22	21.21	19.03	61.54	46.83	67.60	20.15	26.14	19.41
1995	18.97	32.85	19.25	59.57	48.84	62.41	9.95	21.49	9.07
1996	19.38	36.27	19.64	59.08	50.54	60.70	18.51	21.58	18.14
1997	22.05	34.00	22.39	61.95	57.92	61.00	20.77	21.01	20.82
1998	22.75	31.18	23.40	72.35	27.20	90.74	38.55	15.62	46.88
1999	21.71	22.95	22.90	80.16	55.46	83.47	38.08	13.18	51.44
2000	21.24	21.21	22.71	76.82	43.04	93.89	30.65	202.43	26.28
2001	20.87	24.34	22.21	87.22	80.09	84.33	30.08	97.89	26.87
2002	21.01	17.34	22.96	106.65	52.46	149.65	29.01	170.64	24.91
2003	20.33	16.89	22.18	136.11	40.89	356.54	30.40	101.80	28.25
2004	20.29	19.67	21.82	111.30	189.93	93.04	34.40	31.80	35.94
2005	22.31	21.69	24.32	118.15	111.62	114.27	31.45	96.98	30.05
2006	23.95	26.92	26.04	118.71	118.91	113.17	30.28	100.26	28.44
2007	24.47	60.14	25.80	127.72	184.41	108.67	30.64	50.23	29.34
2008	23.82	34.65	26.09	126.35	118.25	123.75	27.45	69.05	25.59
2009	22.11	14.67	25.77	207.34	37.75	440.06	37.72	41.81	38.45
2010	22.12	16.05	25.34	192.79	43.72	1326.90	32.49	49.31	32.05
2011	21.05	19.13	23.27	209.27	45.03	336.33	32.16	63.08	30.90
2012	21.84	16.84	24.55	357.47	41.01	336.33	36.09	109.64	33.70
	Australia			India			Indonesia		
1990	22.32	59.45	17.89	27.61	7.64	39.57	23.87	20.85	25.16
1991	33.85	76.53	28.35	29.61	10.84	39.88	23.04	21.02	23.80
1992	35.88	55.72	33.33	25.19	10.97	32.58	26.71	18.44	29.18
1993	34.27	41.66	33.50	26.63	8.29	38.72	23.12	21.90	23.65
1994	27.99	38.33	26.75	23.60	9.94	34.59	22.35	22.85	22.80
1995	36.19	34.66	36.71	21.58	10.94	29.60	19.48	28.85	18.28
1996	36.66	37.93	36.35	21.42	11.51	27.26	20.09	23.88	20.25
1997	37.92	43.14	36.55	21.04	20.11	23.36	20.61	19.36	21.64
1998	28.78	38.69	26.31	22.85	19.01	25.98	32.81	11.10	52.45
1999	28.55	28.65	28.56	23.04	22.81	25.66	40.37	18.39	59.84
2000	30.88	36.18	29.45	23.37	16.73	26.83	21.88	8.93	27.35
2001	36.14	38.88	35.38	23.92	13.55	29.00	41.46	12.22	2478.08
2002	31.80	40.72	29.60	22.49	12.06	27.74	33.57	17.34	48.76
2003	28.52	36.22	26.55	21.47	13.21	26.06	36.25	15.21	50.59
2004	27.36	37.81	24.88	19.06	13.48	22.86	38.62	19.65	52.71
2005	26.54	33.49	24.74	18.69	14.01	22.09	26.82	21.86	33.87
2006	27.90	35.91	25.79	17.90	16.04	19.80	30.05	18.63	38.21
2007	26.18	33.15	24.35	17.39	15.70	19.02	27.50	18.62	32.94
2008	25.52	55.15	21.58	17.36	11.53	21.88	25.40	13.01	31.32
2009	28.53	24.67	29.81	17.51	10.76	22.42	25.04	14.55	28.76
2010	29.55	19.21	34.29	17.97	12.85	21.36	21.98	18.16	23.24
2011	29.16	18.11	35.06	17.18	13.64	19.47	20.43	15.03	21.76
2012	26.18	18.46	30.21	17.46	14.48	19.17	18.21	13.75	19.20

Hideyuki Kamiryō: Two Supplemental Proofs such that the Real Rate of Profits>Returns Equals
 ever Zero, actually and endogenously, under the Money-Neutral

Table S-2 The speed years by country and by sector (Total, Government, and Private sectors)

Table S-2	$1/\lambda^+$	$1/\lambda_G^+$	$1/\lambda_{PRI}^+$	$1/\lambda^+$	$1/\lambda_G^+$	$1/\lambda_{PRI}^+$	$1/\lambda^+$	$1/\lambda_G^+$	$1/\lambda_{PRI}^+$
	Argentina			Brazil			Russia		
1990	16.28	14.75	6.25	17.39	14.32	18.59			
1991	11.53	10.80	7.73	8.39	7.38	8.69			
1992	15.25	6.51	9.53	8.33	8.56	8.34			
1993	7.86	60.79	6.75	35.07	10.36	46.41			
1994	7.87	277.45	6.57	49.16	10.73	99.31			
1995	8.24	56.34	7.38	33.57	46.74	32.83	9.31	9.11	7.20
1996	7.41	18.24	8.60	51.33	33.13	57.09	10.18	16.55	9.17
1997	6.05	19.44	7.98	46.07	23.75	53.75	18.99	26.83	17.52
1998	1.48	23.50	6.92	51.76	26.21	60.57	39.00	945.23	31.62
1999	97.72	20.04	8.24	44.26	49.53	43.61	30.26	29.33	31.00
2000	75.44	25.99	0.20	46.87	44.95	47.47	11.80	10.54	12.22
2001	48.76	1.06	3.85	60.00	44.70	65.25	9.33	12.38	8.71
2002	66.03	1.71	0.09	68.63	61.08	71.18	11.91	67.77	9.81
2003	83.14	6.65	6.82	65.80	51.64	70.30	10.93	12.74	10.36
2004	72.34	13.72	24.72	53.12	47.46	54.89	10.69	46.50	8.72
2005	80.63	0.48	16.75	57.66	37.60	64.76	11.15	9.21	12.66
2006	119.62	2.30	127.50	53.29	37.57	59.08	9.18	11.26	9.55
2007	203.07	8.38	1960.01	43.52	34.24	47.11	6.50	18.05	5.37
2008	81.82	8.44	29.02	33.11	18.79	41.94	5.34	10.80	3.80
2009	879.86	5.67	13.34	45.03	26.99	54.19	8.40	17.28	1.28
2010	5.03	33.64	0.55	33.55	33.75	33.58	2.86	12.04	16.05
2011	5.71	14.91	1.27	30.04	25.39	31.85	11.29	7.59	83.34
2012	1.31	23.80	0.19	34.85	32.23	35.87	17.55	243.97	94.66
	Saudi Arabia			South Africa			Turkey		
1990	37.40	32.56	54.26	15.27	11.72	16.54	12.84	12.53	14.86
1991	17.19	17.11	18.42	42.47	29.48	44.17	4.38	9.35	9.58
1992	28.74	32.69	35.45	59.14	10.38	60.44	4.99	9.93	7.24
1993	25.95	25.34	29.31	99.27	11.17	73.62	5.29	16.14	6.07
1994	36.24	23.36	49.60	348.53	8.12	80.73	7.85	27.03	12.15
1995	26.50	26.94	29.33	417.48	36.49	144.44	6.71	25.58	8.92
1996	30.00	21.97	35.42	553.32	8.39	91.80	5.61	5.58	6.78
1997	28.32	21.81	33.40	37.19	15.66	15503.45	6.19	9.71	8.95
1998	30.48	30.46	31.51	275.64	9.08	90.63	7.12	42.62	17.99
1999	36.90	28.42	44.62	609.51	8.31	83.75	8.94	14.43	34.52
2000	42.13	34.80	49.43	108.00	9.22	149.28	8.03	17.78	14.25
2001	33.57	25.47	39.05	335.01	38.86	82.52	358.36	4.84	17.05
2002	29.66	22.90	34.06	84.95	32.48	163.68	10.70	11.82	84.42
2003	30.35	28.82	31.29	385.57	9.76	72.81	10.68	6.18	65.10
2004	34.22	36.27	32.44	604.59	9.32	58.02	9.12	9.61	37.19
2005	43.95	53.50	34.74	205.71	20.71	47.48	8.60	10.98	19.94
2006	49.53	72.81	33.12	145.23	6.41	35.06	7.25	13.89	11.43
2007	45.29	59.79	38.94	65.96	11.14	22.83	6.86	16.07	11.64
2008	57.94	17.36	112.86	35.71	7.43	21.96	5.83	14.72	11.57
2009	26.67	13.62	40.43	39.10	13.01	35.07	13.14	14.15	85.93
2010	32.01	12.91	59.88	36.93	10.71	31.40	1.22	23.50	9.48
2011	48.04	13.20	113.94	37.15	74.82	29.19	1.79	13.21	86.25
2012	47.28	13.52	114.98	36.99	32.00	27.81	1.87	14.12	24.03
	the U K			Euro area			France		
1990	55.20	29.39	50.03				32.11	22.52	37.38
1991	246.56	18.86	130.73				36.02	30.52	38.27
1992	1789.46	34.44	320.94				42.42	28.66	47.96
1993	1489.10	51.55	399.67				59.15	20.53	95.92
1994	379.95	28.98	455.39				52.45	19.68	82.62
1995	43.03	16.13	2709.88				49.14	21.74	68.90
1996	58.96	28.16	994.02				60.10	23.58	99.35
1997	72.33	12.27	417.81				64.75	29.40	101.49
1998	62.69	26.29	279.05				53.85	32.44	69.03
1999	115.07	30.56	98.90	64.25	78.51	59.21	60.87	50.23	67.92
2000	507.90	31.56	78.99	58.85	89.84	50.77	43.19	55.28	38.95
2001	438.43	28.25	93.58	47.54	57.53	44.13	54.19	118.62	43.69
2002	404.15	21.80	180.16	34.80	36.00	34.37	55.68	57.28	55.33
2003	472.84	14.76	251.33	54.77	42.65	62.13	58.83	46.11	65.97
2004	504.26	16.85	233.77	56.46	39.60	69.47	58.76	(55.51)	60.41
2005	390.64	14.59	255.16	53.50	40.52	63.08	55.23	(56.08)	55.13
2006	567.20	0.21	183.64	50.28	64.13	45.82	51.19	62.92	47.58
2007	411.04	11.56	174.32	41.91	69.31	35.49	44.29	47.06	43.36
2008	218.55	12.30	213.27	42.89	51.25	40.07	45.18	43.90	45.93
2009	200.13	49.66	253.72	64.15	22.03	291.15	72.06	30.94	114.82
2010	183.24	10.02	231.83	61.19	21.39	383.80	69.92	45.00	84.29
2011	96.66	54.59	115.95	57.29	28.08	117.68	54.47	44.02	84.29
2012	112.32	68.08	130.48	65.02	28.40	210.47	59.49	50.78	63.72

Table S-3 The speed years by country and by sector (Total, Government, and Private sectors)

Table S-3	$1/\lambda^+$	$1/\lambda_G^+$	$1/\lambda_{PRI}^+$	$1/\lambda^+$	$1/\lambda_G^+$	$1/\lambda_{PRI}^+$	$1/\lambda^+$	$1/\lambda_G^+$	$1/\lambda_{PRI}^+$
	Germany			Italy					Spain
1990	(31.56)	23.68	(34.28)	27.98	24.57	7.90	21.05	11.52	23.34
1991	28.89	26.88	(29.87)	4.27	6.45	11.60	21.87	12.39	23.41
1992	(30.57)	30.12	(31.34)	34.02	28.55	10.08	24.91	8.23	28.48
1993	36.55	28.34	39.32	49.24	59.58	10.63	33.83	6.97	41.10
1994	31.67	38.39	31.15	45.80	49.68	9.71	34.95	7.26	43.06
1995	31.10	(31.95)	31.41	31.04	30.83	4.05	29.87	8.54	34.52
1996	35.63	32.22	36.87	39.58	21.79	2.47	30.52	9.43	35.39
1997	35.74	41.46	35.37	26.71	39.37	17.83	29.62	23.51	31.06
1998	33.61	30.99	34.56	36.15	44.38	7.47	27.19	48.46	26.09
1999	42.21	37.59	43.60	49.44	216.32	48.52	26.44	39.79	24.42
2000	34.20	37.35	33.65	42.73	9.47	50.40	24.32	39.18	21.39
2001	48.68	36.43	52.60	46.84	11.41	64.56	25.47	37.14	22.76
2002	59.23	40.41	65.49	46.58	31.71	52.69	25.46	44.27	21.91
2003	64.11	40.20	72.39	49.78	59.08	51.06	24.75	34.94	22.27
2004	94.19	54.72	108.19	11.27	22.03	7.18	23.42	33.27	20.96
2005	99.32	69.32	108.97	25.76	19.22	28.11	22.06	43.87	18.08
2006	91.43	74.19	96.71	42.15	40.23	43.79	20.74	51.94	16.19
2007	72.32	64.44	74.69	43.28	28.20	50.13	20.78	54.39	16.23
2008	67.49	55.05	71.35	47.72	22.39	61.63	23.30	28.17	22.44
2009	128.74	79.39	145.89	82.93	15.48	193.97	34.06	17.46	40.78
2010	103.07	54.68	121.50	60.46	18.00	99.50	38.27	44.91	40.10
2011	76.28	62.57	121.50	69.24	18.69	120.96	43.74	45.69	47.26
2012	92.50	84.79	94.57	106.72	23.64	207.20	52.06	10.07	91.39
	Norway			Sweden					Finland
1990	29.31	4.77	25.24	28.93	141.94	20.18	23.51	28.69	(21.88)
1991	31.22	113.73	31.59	34.64	65.68	32.19	50.61	20.31	75.46
1992	32.56	12.52	40.28	33.98	50.10	33.55	71.38	24.16	(98.21)
1993	30.16	11.81	37.92	42.58	4.47	101.92	116.70	53.45	145.07
1994	29.88	21.41	34.01	38.05	7.47	70.66	88.65	21.77	136.54
1995	32.41	45.89	32.47	35.48	13.57	53.00	38.39	21.66	47.45
1996	38.74	35.03	42.43	34.97	33.48	36.46	45.35	29.27	53.18
1997	35.53	33.57	37.80	42.40	32.50	48.29	41.83	278.68	35.30
1998	24.05	18.79	26.23	41.00	69.95	35.76	38.41	36.97	39.20
1999	35.04	14.92	50.31	39.67	58.18	36.15	54.88	44.53	60.15
2000	44.16	25.14	55.76	38.12	140.71	27.99	51.19	30.57	87.45
2001	57.39	36.10	68.04	43.38	130.65	33.91	53.78	116.20	43.34
2002	56.40	11.82	41.22	49.82	45.01	53.67	60.53	122.82	49.35
2003	64.54	12.91	46.33	69.73	46.52	90.82	51.59	55.70	49.98
2004	49.86	4.47	36.82	58.38	65.38	57.90	61.43	119.48	50.71
2005	49.87	47.57	57.26	60.22	115.49	49.59	46.58	77.96	39.27
2006	44.91	42.89	50.26	58.37	211.26	43.55	49.92	130.52	38.50
2007	34.54	33.09	37.08	55.72	204.18	39.66	40.88	125.64	30.63
2008	37.68	29.82	42.73	64.28	103.44	56.70	42.93	107.40	32.93
2009	40.18	90.42	35.31	90.14	81.65	98.88	77.32	24.89	#N/UM!
2010	41.14	80.83	38.62	64.69	88.62	60.22	76.22	60.89	83.29
2011	6.59	57.64	6.22	53.21	66.27	48.99	46.68	87.39	40.69
2012	7.85	63.86	7.68	57.03	65.80	54.98	52.69	95.21	47.44
	Belgium			Denmark					Iceland
1990	59.79	36.48	84.31	3.28	6.32	11.95	34.94	23.88	39.02
1991	76.91	4.28	174.79	75.65	1.01	614.41	33.30	14.10	44.92
1992	52.55	3.01	91.05	112.62	3331.88	93.08	38.58	24.34	44.57
1993	90.84	4.85	203.12	86.25	86.03	88.81	43.67	26.80	50.87
1994	192.56	10.34	604.44	73.74	47.80	81.66	47.23	29.40	55.24
1995	55.42	203.85	80.86	54.03	63.28	53.01	42.94	27.70	49.36
1996	54.55	22.78	70.29	45.91	348.46	39.64	33.42	42.05	31.49
1997	47.50	18.58	54.36	33.96	273.75	25.28	31.22	39.14	29.29
1998	46.14	23.36	51.59	29.41	483.39	21.27	22.07	50.46	17.76
1999	33.94	43.43	33.79	33.55	181.09	30.90	27.45	56.56	22.72
2000	35.15	46.69	34.06	30.81	493.78	26.84	23.99	40.67	20.93
2001	55.11	93.68	49.32	33.62	92.82	29.16	25.34	79.74	19.27
2002	84.21	48.71	107.17	33.92	61.60	31.30	46.07	64.08	43.03
2003	#N/UM!	169.50	193.41	37.71	44.07	38.00	34.22	52.05	31.44
2004	67.16	51.14	74.29	39.62	85.34	34.68	21.26	66.60	16.53
2005	68.70	43.68	80.95	42.41	214.90	31.29	17.42	152.11	10.15
2006	58.62	54.32	60.32	36.39	261.65	25.99	11.83	197.17	7.22
2007	61.32	58.38	62.59	32.69	187.25	23.72	15.23	102.21	10.04
2008	55.95	53.73	57.08	42.29	167.59	32.56	10.19	103.86	8.15
2009	74.62	23.23	134.58	81.51	65.13	93.90	18.25	9.82	22.20
2010	99.23	34.99	156.97	78.24	45.79	106.80	21.07	15.79	23.93
2011	71.14	36.09	95.33	85.05	93.73	87.16	22.98	20.66	24.61
2012	72.70	37.51	96.70	109.52	84.14	124.13	22.16	20.72	23.36

Hideyuki Kamiryō: Two Supplemental Proofs such that the Real Rate of Profits>Returns Equals
 ever Zero, actually and endogenously, under the Money-Neutral

Table S-4 The speed years by country and by sector (Total, Government, and Private sec-
 tors)

Table S-4	$1/\lambda_G^+$	$1/\lambda_G^+$	$1/\lambda_{PRI}^+$	$1/\lambda_G^+$	$1/\lambda_G^+$	$1/\lambda_{PRI}^+$	$1/\lambda_G^+$	$1/\lambda_G^+$	$1/\lambda_{PRI}^+$
	Luxemburg			Netherlands			Swtzerland		
1990				39.62	10.32	49.06	24.56	35.30	18.71
1991				40.78	26.63	44.23	27.38	22.72	29.08
1992				41.22	20.18	46.02	33.27	31.34	33.76
1993				46.97	21.68	56.56	40.85	23.25	46.51
1994				43.79	22.41	51.19	36.59	29.30	38.47
1995	99.58	48.17	127.28	46.53	12.87	62.04	31.69	24.25	33.49
1996	74.25	102.84	86.96	44.79	21.79	51.64	34.52	21.92	38.56
1997	41.92	42.98	42.63	44.34	20.84	51.70	27.74	18.10	30.61
1998	36.29	33.67	38.87	42.31	18.35	58.25	32.95	33.73	32.94
1999	30.33	47.43	26.96	44.70	21.05	66.53	36.10	24.86	39.82
2000	31.98	57.83	27.37	53.73	24.85	87.89	36.24	22.74	41.15
2001	18.75	48.00	14.62	46.41	43.96	47.83	36.30	47.78	34.79
2002	16.90	136.37	13.39	57.92	52.27	60.98	43.14	27.94	48.16
2003	17.26	41.68	15.18	62.06	58.35	65.22	45.80	34.77	48.80
2004	24.84	42.64	23.65	84.18	67.99	91.89	45.63	33.63	49.04
2005	24.77	55.68	23.28	61.67	37.17	77.77	44.68	43.78	44.93
2006	23.04	49.02	21.91	72.65	112.21	68.75	45.13	48.50	44.71
2007	28.28	65.81	26.94	59.11	58.11	61.78	50.91	20.07	69.63
2008	25.84	#NUM!	24.49	40.50	144.80	35.82	55.16	21.18	76.17
2009	20.60	43.48	20.75	44.05	23.33	57.36	62.64	76.42	60.76
2010	22.69	#NUM!	23.75	56.11	24.68	81.92	64.13	54.74	66.41
2011	25.66	#NUM!	27.19	72.65	29.47	109.78	62.76	55.55	64.49
2012	25.85	69.38	27.86	74.50	45.28	91.79	62.53	53.79	64.64
	Czech Rep			Hungary			Poland		
1990				25.60	37.81	11.91	36.53	20.87	47.49
1991				50.81	22.26	21.35	53.10	8.99	121.08
1992				7.55	16.45	21.89	0.06	51.12	3.49
1993				51.68	9.25	19.66	13.53	31.87	10.34
1994				2.53	8.33	20.55	12.84	29.34	10.78
1995	2.70	4.29	1.99	0.85	7.48	17.52	16.48	38.76	13.84
1996	0.11	5.59	3.32	15.64	13.35	21.47	14.99	31.77	12.62
1997	23.60	5.19	59.73	12.88	9.28	16.92	11.47	25.80	9.56
1998	25.24	11.01	19.76	11.16	5.57	13.82	10.17	28.73	8.18
1999	22.03	20.39	19.47	10.89	5.35	28.09	9.79	6.98	4.06
2000	18.47	98.57	18.57	7.97	10.34	10.82	9.45	5.99	1.66
2001	17.29	16.60	18.32	13.27	9.45	20.53	12.31	7.45	19.64
2002	15.79	21.04	15.04	11.12	4.51	14.28	11.50	7.30	41.25
2003	16.41	12.57	17.73	7.06	5.27	52.84	10.71	9.84	27.82
2004	17.89	14.64	19.25	6.53	6.36	22.78	10.36	9.10	3.58
2005	22.51	20.59	23.87	1.76	5.79	77.80	12.42	23.04	0.43
2006	22.99	19.24	24.99	0.63	5.94	22.27	7.32	31.09	4.64
2007	23.24	25.84	23.73	118.99	11.20	23.61	0.26	20.68	13.15
2008	25.91	15.58	31.55	34.40	12.42	23.08	655.34	30.97	66.48
2009	27.56	11.95	40.00	41.15	13.75	59.10	47.63	4.54	90.13
2010	26.19	13.83	33.97	49.62	11.66	740.73	32.95	4.88	58.10
2011	26.61	14.40	34.30	57.87	12.80	1149.94	29.26	7.97	46.48
2012	27.80	15.45	35.55	56.23	13.78	1148.90	28.07	9.45	42.16
	Egypt			Kenya			Morocco		
1990	12.88	8.82	3.54	0.49	14.95	1.60	41.76	15.38	104.40
1991	105.20	26.22	1.47	13.00	9.87	13.75	54.27	18.08	260.54
1992	57.11	11.02	7.46	16.82	14.09	17.47	60.66	24.10	38.88
1993	119.87	46.94	1.61	11.61	8.90	11.96	59.80	22.86	80.85
1994	173.56	26.44	6.71	21.55	8.97	25.84	60.60	21.97	136.51
1995	15.33	16.48	17.47	11.17	6.42	13.72	76.21	19.90	108.63
1996	145.58	14.14	874.93	51.52	38.96	57.10	76.36	38.72	154.16
1997	151.37	14.07	13.92	62.24	23.46	54.12	63.26	44.38	133.30
1998	16.53	14.89	18.77	45.37	30.16	47.85	7.22	6.60	7.43
1999	51.79	30.05	54.87	54.21	35.83	55.90	33.47	31.65	8.58
2000	53.64	19.58	548.42	83.09	40.23	253.26	35.25	12.58	61.76
2001	15.59	9.32	16.48	190.40	53.48	352.99	43.69	82.48	38.79
2002	52.95	9.05	179.85	54.80	42.70	59.18	40.64	65.33	36.68
2003	57.61	13.55	220.78	51.87	26.97	74.66	36.96	79.84	32.45
2004	66.09	14.75	223.38	82.59	32.65	129.02	33.71	78.57	29.63
2005	68.05	14.57	67.82	170.46	41.81	105.35	37.56	70.01	34.11
2006	83.81	6.47	44.05	438.41	31.50	101.85	36.72	37.77	36.61
2007	636.75	9.85	7.32	5.20	32.93	0.50	30.56	44.68	28.20
2008	198.78	6.34	3.78	64.35	18.74	13.18	20.83	33.95	18.71
2009	880.46	6.48	25.94	43.31	11.50	427.18	21.42	37.40	19.36
2010	129.34	8.22	27.91	24.17	10.20	35.35	20.90	70.91	18.05
2011	#DIV/0!	#DIV/0!	#DIV/0!	18.15	14.06	21.50	20.05	36.30	18.21
2012	#DIV/0!	#DIV/0!	#DIV/0!	15.68	14.77	16.50	18.69	21.39	18.14

Table S-5 The speed years by country and by sector (Total, Government, and Private sectors)

Table S-5	$1/\lambda_G^+$	$1/\lambda_G^+$	$1/\lambda_{PRI}^+$	$1/\lambda^+$	$1/\lambda_G^+$	$1/\lambda_{PRI}^+$	$1/\lambda^+$	$1/\lambda_G^+$	$1/\lambda_{PRI}^+$
	Bangladesh			Philippines			Sri Lanka		
1990	37.89	25.43	191.26	1.39	15.26	6.59	22.31	3.63	27.50
1991	37.14	27.66	266.34	61.84	19.76	7.36	24.30	2.89	27.08
1992	41.46	26.11	95.70	52.73	26.09	8.43	20.81	7.35	25.05
1993	44.61	29.71	63.49	26.54	26.49	7.42	20.10	5.67	25.97
1994	41.36	33.88	55.83	46.04	31.44	7.31	15.25	4.83	25.89
1995	45.21	30.95	138.43	9.92	31.08	8.89	20.10	4.85	30.61
1996	38.33	29.02	29.72	95.62	30.07	3.92	21.42	5.72	39.30
1997	35.41	24.50	244.65	65.74	42.36	2.75	12.80	7.46	16.33
1998	34.19	27.09	189.98	35.01	#NUM!	47.69	19.37	7.91	27.83
1999	35.13	26.46	77.49	61.01	#NUM!	66.63	17.21	8.75	25.31
2000	44.84	30.02	233.67	76.78	#NUM!	87.81	16.76	6.30	25.19
2001	26.72	16.14	33.13	355.27	24.72	(1.98)	26.42	6.34	42.26
2002	67.94	33.87	68.81	503.09	20.31	(6.94)	25.57	8.67	37.12
2003	53.12	32.01	4.80	0.94	13.18	7.56	27.75	9.46	38.01
2004	50.26	25.14	6.39	2.32	13.14	7.49	21.82	9.00	30.53
2005	41.66	21.47	6.22	3.48	22.68	7.29	18.97	9.52	28.86
2006	46.41	19.12	11.75	5.42	24.04	6.79	17.75	12.39	26.07
2007	50.21	19.35	8.23	11.10	57.40	6.87	17.74	12.18	25.48
2008	58.17	19.67	4.79	96.11	30.54	(19.48)	18.80	14.23	26.01
2009	73.51	26.11	5.80	29.36	#NUM!	19.25	21.67	5.57	38.66
2010	91.44	25.59	7.34	533.58	34.25	71.73	17.63	6.05	28.57
2011	116.04	26.34	0.02	86.55	47.57	(246.87)	16.66	6.26	25.60
2012	137.03	25.12	0.35	71.30	43.94	33.81	14.88	6.57	21.24
	Malaysia			Singapore			Thailand		
1990	30.38	23.76	19.73	26.10	56.19	21.55	19.66	72.27	15.33
1991	16.78	27.07	15.35	26.46	50.81	22.31	19.23	64.75	15.63
1992	18.83	25.95	17.47	29.24	78.80	22.77	20.18	38.54	17.59
1993	17.93	30.54	16.20	24.12	87.63	17.47	20.36	37.75	18.06
1994	17.33	43.68	14.97	31.99	79.08	25.80	19.47	45.88	16.80
1995	16.68	31.75	15.07	31.71	105.70	24.03	18.15	50.34	15.53
1996	18.97	28.42	17.75	29.02	114.42	20.65	18.56	28.44	17.11
1997	18.84	39.51	17.03	30.24	95.06	24.69	24.43	23.29	24.99
1998	36.31	18.96	44.09	42.26	116.93	32.82	54.72	18.40	107.26
1999	39.50	16.93	51.49	35.31	82.32	28.84	52.62	16.88	100.21
2000	30.40	17.02	36.37	27.43	65.69	22.87	42.88	22.47	58.08
2001	31.07	18.65	35.85	36.85	21.17	40.64	39.59	23.16	50.65
2002	32.90	23.67	35.70	37.37	26.76	39.79	39.30	60.99	35.73
2003	37.76	21.34	44.17	53.55	53.39	53.84	37.33	35.12	38.77
2004	37.29	19.89	44.81	34.16	44.81	32.38	32.43	69.09	28.15
2005	43.72	19.25	58.07	39.78	60.94	36.27	24.41	48.07	21.63
2006	45.71	20.25	61.49	46.56	63.46	43.83	26.58	33.24	25.33
2007	42.86	20.46	56.34	45.91	90.01	38.30	31.49	34.58	30.85
2008	44.48	18.81	62.94	31.56	37.58	31.68	25.39	16.78	29.60
2009	63.29	18.22	177.71	36.19	15.82	49.82	41.68	41.00	41.84
2010	39.75	17.34	56.19	52.13	59.58	50.65	30.34	21.15	33.95
2011	34.47	18.74	42.75	48.73	75.29	44.25	28.90	20.26	32.25
2012	14.80	20.72	14.10	37.45	74.98	32.45	25.30	41.23	23.20
	Iran			Kazakhstan			Pakistan		
1990	14.53	17.00	14.08				73.68	22.34	13.57
1991	12.74	13.61	12.70				33.97	14.47	10.91
1992	17.64	16.24	18.04				5.42	9.66	8.86
1993	22.72	61.88	21.30				12.79	6.84	9.55
1994	58.80	(42.65)	65.28				13.21	8.87	9.32
1995	19.71	15.32	19.83	21.17	12.27	25.86	19.53	9.37	9.88
1996	49.24	(9.59)	34.69	9.98	7.88	55.57	13.98	7.55	8.61
1997	24.65	17.61	22.72	6.73	8.80	68.30	37.23	7.27	6.98
1998	20.83	9.88	25.28	6.12	9.51	84.13	35.04	9.40	8.37
1999	30.73	34.61	30.46	16.69	11.13	90.30	382.70	8.11	49.56
2000	30.73	(92.89)	29.08	24.81	19.64	157.30	7.96	10.79	10.45
2001	21.85	24.48	15.85	4.15	7.88	9.07	23.44	10.74	40.07
2002	22.48	17.41	16.69	19.69	20.35	26.91	49.63	18.29	12.13
2003	18.60	(1.04)	14.90	23.48	16.08	33.74	215.15	18.15	162.58
2004	18.39	4.58	16.59	26.43	18.09	40.39	49.51	21.43	14.25
2005	23.59	3.45	23.61	21.11	21.13	23.61	3.28	14.12	13.04
2006	23.57	3.35	26.31	19.38	21.76	19.30	0.15	19.49	7.53
2007	25.94	15.67	31.28	15.04	14.70	15.73	1.71	11.88	7.61
2008	22.29	9.37	28.31	21.22	57.44	18.15	7.82	8.42	5.22
2009	19.32	10.64	22.36	17.17	15.71	17.52	19.31	12.66	7.40
2010	20.90	15.74	22.35	18.74	16.99	19.13	91.66	10.92	77.86
2011	#DIV/0!	#DIV/0!	#DIV/0!	26.09	18.78	28.14	122.35	6.22	184.75
2012	#DIV/0!	#DIV/0!	#DIV/0!	16.20	23.42	15.47	216.02	7.49	42.47

Hideyuki Kamiryo: Two Supplemental Proofs such that the Real Rate of Profits/Returns Equals ever Zero, actually and endogenously, under the Money-Neutral

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