Chapter 5

How to Solve the Fiscal Problems In the Current Financial Crisis

5.1 Introduction: Why Separately vs. Endogenously towards Fiscal Policy?

This chapter moves to a whole sketch of fiscal policy, by measuring and interpreting the endogenous costs of capital by country and sector, and approaches how to solve fiscal problems. A related endogenous equation and its reduced hyperbola are used for this purpose, with the KEWT database. Statistics data and related databases are not fitted for essentially solving fiscal problems. This chapter begins with why the KEWT database is most directly policy-oriented, compared with the current databases. Each chapter after chapter 5 discusses a focused issue step by step, gradually towards a total version and, essentially answers unsolved economic problems at the macro level.

A system for national accounts (SNA, 1993) aims at records/recording and presents a base for statistics. The purpose of recording is right at the SNA. Statistics data are available, in addition to the SNA data recorded by country, at the current worldwide databases such that Penn World Table (PWT and EPWT), BEA, NBER, KOF, DDGG, EU KLEMS of the Conference Board, Real-Time, Time-Use, OECD, UN and UNU, IMF and the World Bank, and KEWT.[1]

Questions: Could the SNA and worldwide databases answer policy-problems to avoid symptomatic treatments to the financial crises and not to repeat bubbles and heavy burden of deficit? Are the database and the solution of economic policies really independent? These questions might be answered solely by setting up another system that aims

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[1] For detail, See Chapter 6. PWT 7.0 and, EPWT, v. 4.0: http://www.pwt.econ.upenn.edu
BEA: http://www.bea.gov . NBER: http://nber.org .
KOF: http://globlization.kof.ethz.ch . Time-Use: http://www.timeuse.org/information/links
ddgg to 10 sectors: http://www.ggde.net/dseries/10-sector.html .
EU KLEMS: http://www.euklems.net/euk09i.shtml .
Real-Time: http://www.philadelphiafed.org/research-and-data/ .
OECD: http://OECD.com . UN: http://unstats.un.org/unsd/snaama/selectionbasicFact.asp .
IMF: http://imf.org . World Bank: http://data.worldbank.org . KEWT 6.12: http://riee.tv .

at policy-oriented sub-system. This is the author's viewpoint. For example, the use of the KEWT database, as expressed by the endogenous system and based on the real assets. The policy-oriented sub-system will cooperate with the SNA and reinforce the SNA. Leaders, policy-makers, and people urgently demand not mere analyses but essential solutions. And, worldwide databases, SNA statistics, economic policies, and the KEWT database reinforce each other--win and win! These expressions are the author's reply at Monograph.

For solving the above problems, the following recognition may be effective as the first step. This recognition is to review the background of the literature, the SNA, and databases, without any preconception. The capitalism started with macro demand and supply by goods and by money. The market principle has been the second best since there has appeared no first-best historically. This recognition will be correct. The market principle is connected with individual utility function. This function aims at maximizing individual consumption. Thus maximum consumption has been a principal objective of econometrics since Samuelson, P. A. (97-120, 1941) clarified a framework of competitive statics and dynamics. Arrow, K. J. and Debreu, G. (265-290, 1954) published a decisive article for equilibrium. Since Klein, L. R. (1-12, 39-57, 1950), econometrics has spread as a great methodology. The equilibrium based on the market principle--the author calls the price-equilibrium has remained since economics started. In the last one decade, the methodology of econometrics has stepped into delicate relationships between deficit, votes, and democracy, as shown at some of academic conferences.

Nevertheless, why has bubbles been repeated after the 1950s? Three grounds are (1) a rough relationship between individual utility and maximized consumption via the capital-labor ratio and in the price-equilibrium, (2) the use of final consumption at households just after the redistribution of income caused by government spending and deficit before redistribution, and (3) the use of deficit as the difference between cash flow-in and –out, under an assumption that government does produce no return. Meade, J. E. (1960, 1962) and Meade, J. E. and Stone, J. R. N. (1969) advocated the income equality of income, expenditures, and output. Yet, this equality is not realized in statistics and databases since the SNA is records-oriented. Wages or compensation and profits or returns are charming objectives in econometrics.

Denote that α or $1-\alpha$ is the relative share of capital or labor, $\Omega = \Omega^* = \Omega_0$ is the capital-output ratio, and $r = r^* = r_0$ is the rate of return in the endogenous-equilibrium. Then, $\alpha = \Omega \cdot r$ presents the best clue to an integrated set of policies that connect real-assets polices with financial, market, central, local/private banks, and other policies to environmental and human society. Nevertheless, statistics and databases, based on records, are unable to accurately measure $\alpha = \Omega \cdot r$.

The KEWT database has repeatedly proved the following fact, by comparing actual data with endogenous data: Estimated data and ratios derived using econometrics are always within a certain range of endogenous data and ratios in a moderate equilibrium. A moderate equilibrium is directly measured by seven endogenous parameters[2] and also indirectly by principal variables such as $\alpha = \Omega \cdot r$ and the growth rates of output and output per capita, g_Y^* and g_y^*. Therefore, econometrics, the current databases, and the KEWT database are colleagues to reinforce each other and thus, econometrics in reality will progress more peacefully for the world economies by country. This is because the rate of change in population in equilibrium equals the actual growth rate of population when the endogenous-equilibrium prevails and because causes of deflation under heavy deficit accumulation are clarified by seven endogenous parameters, with endogenous equations and the corresponding hyperbolic equations. For the rate of inflation or a minus inflation (=deflation), a hyperbola of the rate of return to the ratio of net investment to output in equilibrium, $r^*(i)$, measures an optimum range of equilibrium endogenously.

The current databases present either an internal rate of return in the discrete time using actual statistics, or Log growth in real-time in the continuous time. Neo- and New- Keynesians pursue the discrete case while Neoclassicists the continuous case. Both cannot be wholly united except for the endogenous system as long as the author has investigated after the 1950s. This is because a discrete Cobb-Douglas (C-D) production function does not hold without clarifying hidden seven endogenous parameters as formed in the endogenous system. A fact is that there is no evidence to prove the relationship between the rate of return, r^*, and the growth rate of output, g_Y^*, in the literature.

Phelps, E. S. (638-643, 1961) proves the existence of the golden rule at the golden age, but without evidences. The relationship between r^* and g_Y^* is a tie in reality. The tie is divided into two; the exogenous Phelps coefficient and the author's endogenous Phelps coefficient, $\alpha/(i \cdot \beta^*)$; $r^* = (\alpha/i \cdot \beta^*)g_Y^*$, where β^* is the quantitative net investment coefficient, $i = I/Y$ is the ratio of net investment to output, and

[2] THREE; the ratio of net investment to output, the rate of change in population, and the relative share of capital, and FOUR; the qualitative net investment coefficient, the relative share of capital, the capital-output ratio, and the speed year coefficient.

endogenous output, $Y = W + \Pi = C + S$, satisfies three equality of income, expenditures, and output, purely endogenously. 'Purely endogenous' holds only when externalities and assumptions completely disappear and only under scientific proofs of mathematicians at the endogenous system. A variety of denotations is used for 'endogenous growth' in the literature but, each definition remains partial. Net investment after capital consumption is involved in the balance of payments and deficit but, it should be purely endogenous in the open structure of the balance of payments,[3] $(S - I) = (S_G - I_G) + (S_{PRI} - I_{PRI})$ at the real assets.

The qualitative net investment coefficient, $1 - \beta^*$, is deeply involved in the rate of technological progress, $g_A^* = i(1 - \beta^*)$. $g_A^* = i(1 - \beta^*)$ holds endogenously while Solow's (1956) and Swan's (1956) exogenously. Upon measure of $g_A^* = i(1 - \beta^*)$, the marginal productivity of capital (MPK) equals the rate of return and the marginal productivity of labor (MPL) equals the wage rate and also, the marginal rate of substitution is measured as 1.0 by year. These values are confirmed using recursive programming by the same year. As a result, perfect competition is released from an assumption, which the literature does not realize commonly and universally by country. This shows a limit of individual utility equation at the micro level, indispensably.

Lastly, as a result, the neutrality of the financial assets to the real assets is complete at the endogenous system, as proved in KEWTs 3.09 to 6.12, each year (one at *Int Adv Econ Res* 16: 282-296; related cells of 65 countries and. the other at KEWT 6.12). This neutrality integrates not only the real and financial assets as the first policy category but also financial, monetary, central bank and private bank policies, and others, as the second policy category. Endogenous 'policies,' based on rival capital and labor at KEWT, work cooperatively with external strategies, based on non-rival education, R&D, learning by doing, and human capital. The core is the government sector that controls the total economy as a whole. The government sector is solely expressed just before the redistribution of income to households and enterprises at the private sector.

Define government spending, $E_G = C_G + I_G$. Then, $T_{AX} - E_G = (S_G - I_G)$ endogenously holds; C_G is consumption and S_G is saving at the government sector. Thus, $T_{AX} = C_G + S_G$ holds, and therefore, $T_{AX} = Y_G$ holds endogenously. As a result, when deficit, ΔD is zero, $T_{AX} = C_G + I_G$ holds since $T_{AX} - \Delta D = C_G + I_G$. $T_{AX} = C_G + I_G$ is derived: The higher

[3] Why is the growth rate of output in equilibrium the highest at $S_G - I_G = 0$? The question is proved by using this equation. When $S_G - I_G = 0$ appears, the ratio of net investment to output, $i = I/Y$, locates at the top of a parabolic convex, since the higher the $i = I/Y$, the higher the rate of technological progress is, as shown by $g_A^* = i(1 - \beta^*)$ below.

the size of government, Y_G/Y, the more the net investment.

Back to a hyperbola, $r^*(i)$; the higher the net investment the lower the rate of return in equilibrium is. These two implies that a goal of two category-integrated policies requires a direction towards a maximized rate of return with a minimized net investment, or the goal should realize an optimum range of the endogenous-equilibrium by using a lower rate of $i = I/Y$. The optimum range is realized by directly adjusting seven endogenous parameters. The speed years for convergence and principal variables are results; shocks getting into close-to-disequilibrium or net investment approaching close to zero, each simultaneously by country. The author indicates that if endogenous results hardly exist the second best market principle must work alone; with repeating bubbles and symptomatic treatments and. without sustainable growth.

5.2 Evidences to an Integrated Set of Policies: Using the Cost of Capital at KEWT

This chapter empirically presents two evidences by country; for developed countries, the US, Australia, Japan, France, Germany, the UK, and; for developing countries, China, India, Brazil, Mexico, Russia, South Africa, each for 1990- 2010. The two evidences are: (1) The cost of capital as the rate of return less the growth rate of output, $CC = C\ of\ C = r^* - g_Y^*$, using KEWT database by country. (2) The rate of return to net investment using a hyperbola, $r^*(i)$, with endogenous rate of inflation or deflation. (1) and (2) are interrelated endogenously. (1) measures the causes of inflation and deflation at the real-assets and (2) presents an optimum range of rate of return to net investment and clarifies the ground hidden behind financial, market, and central and local bank policies.

This section shows evidences of the cost of capital, where the nominal rate=the real rate + the rate of inflation or deflation, whose first setting was Fisher, I. (1907, 87-116). Evidences are shown by **Tables 1, 2, 3**, and **4**. Suppose that the rate of return at the G sector is minus due to heavy deficit by year. Then, even if the rate of return at the PRI sector is high, the rate of return at the total economy becomes extremely low. If the rate of return at the PRI sector is low due to crowding out, the rate of return at the total economy becomes much close to zero, as shown in Japan. For evidences of the above facts, Tables 1, 2, 3, and 4 each compare the cost of capital in the G sector with that in the PRI sector; accordingly, at the total economy as the weighted aggregate or average.

Let the author explain the logics behind the evidences shown in the four tables. The rate of return and the growth rate of output are connected with $\alpha/(i \cdot \beta^*)$ in $r^* = (\alpha/i \cdot \beta^*)g_Y^*$. Suppose $\alpha = i \cdot \beta^*$ is 1.0. Then, the cost of capital is zero, which is not realized. $\alpha < i \cdot \beta^*$ and $\alpha > i \cdot \beta^*$ are in reality. A hyperbola of $\beta^*(i)$ shows that the higher the $i = I/Y$ the more ineffective (or lower) endogenous technological progress is. The contents of technological progress must be selected severely between the G and PRI sectors and towards earth environmental cooperation. The hyperbola type of $\beta^*(i)$ is the same as that of $r^*(i)$ as explained at the next section; since the type is expressed by $y = \frac{cx+d}{ax}$, where b=0 and accordingly the vertical asymptote is zero, VA=0. The above fact indicates that net investment by country should be low and if it is high bubbles will be repeated. A sustainable technological progress is the goal of an integrated set of policies for real, fiscal, financial markets, and central and local banks, and others.

The $\alpha/(i \cdot \beta^*)$ is the endogenous Phelps coefficient and determines the level of the cost of capital. Besides, the rate of inflation or deflation is measured by the rate of return less the horizontal asymptote; $r^* - HA_{r^*(i)}$ (see soon below). Further, a sign to bubbles is expressed by the valuation ratio as the rate of return divided by the cost of capital, $v^* = r^*/(r^* - g_Y^*)$. When the valuation ratio is abnormal or shows a shock similarly to the speed years for convergence, the endogenous-equilibrium is uncontrollable by policy-makers. Many countries have the valuation ratio abnormal often in the last 21 years, as shown each by the third row of Tables 1, 2, 3, and 4. Most of developed countries have shown a negative rate of inflation or deflation. This is traced back to deficits accumulated beyond government savings (see Note 3). And, a sign of bubbles is foreseen by the valuation ratio. If the valuation ratio begins to rapidly rise, financial and market symptomatic treatments are required not to repeat bubbles. Bubbles are a common source of declining fortune of a country. Symptomatic treatments should be used for oppressing bubbles. Symptomatic treatments aiming at economic recovery, however, are impossible since a low rate of return is a result of accumulated deficits and debts. Central bank's attitude aiming at against inflation follows the above logic and evidences.

5.3 Evidences to an Integrated Set of Policies: Using a Hyperbola, $r^*(i)$

The endogenous system is geometrically strengthened by twelve hyperbolas reduced from corresponding endogenous equations in the endogenous-equilibrium.[4] The processes to form endogenous equations were wholly proved step by step, as summarized in a working paper (Feb, 2011). The $r^*(i)$ presents a method for controlling the rate of inflation and deflation, by moving the current level of $i = I/Y$. Seven endogenous parameters lead the endogenous-equilibrium to a balanced and moderate level. Deflation appears only when accumulated deficits or debts are extreme, as explained above.

The maximum utility theory is able to protect its thought by cooperating with $r^*(i)$. The concept of maximum and minimum in the literature is illustrated by the parabolic curve, convex and concave, only at the 1st quadrant but, evidences are not enough under the uses of prevailing Log growth and the real-time of Croushore, D., and Stark, T. (493-501, 2003). In the case of $r^*(i)$, a maximum rate of return and a minimum net investment are in reality at an optimum range of $r^*(i)$ at the 1st and 4th quadrants. Evidences show that the maximum rate of return is realized when deficit is zero. Accordingly, questions regarding 'deficit and growth' and 'increase in taxes and decrease in deficit' are accurately answered with the endogenous size of government of $T_{AX}/Y = (C_G + S_G)/Y$ (see Note 3).

Figures 2 and **3** each show $r^*(i)$ of 12 countries, corresponding with Tables 1, 2, 3, and 4. These figures were drawn helped with Tomoda Katsuhisa's 'specified' software to hyperbolas. Tomoda K. and his lifework have developed 'general' software, aiming at mathematical education at all high schools in Japan. The final form for any type of hyperbolas is shown by $\left(y - \frac{c}{a}\right)\left(x + \frac{b}{a}\right) = \frac{f}{a}$, where the horizontal asymptote (HA) is given by $\frac{c}{a}$, and the vertical asymptote (VA) is given by $\frac{-b}{a}$. Tomoda K., in his software, only uses a standard type of $y = \frac{cx+d}{ax+b}$ and

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[4] Twelve hyperbolas reduce to six forms by type. (1) $y = \frac{1}{ax+b}$: 1-1 $speed(i)$ and 1-3 $speed(n)$; (2) $y = \frac{cx+d}{ax}$: 2-1 $r^*(i)$. 6-1 $\beta^*(i)$; (3) $y = \frac{cx+d}{b}$: 2-3 $r^*(n)$; (4) $y = \frac{cx}{ax+b}$: 3-1 $\Omega^*(i)$. 4-1 $i(n)$. 4-3 $\Omega^*(\beta^*)$; (5) $y = \frac{d}{ax+b}$: 3-3 $\Omega^*(n)$; (6) $y = \frac{cx+d}{ax+b}$: 5-1 $\beta^*(n)$. 5-3 $\widetilde{\beta^*}(n)$, where. 6-3 $\alpha(i)$. 6-4 $\alpha(i)$. This chapter only uses (2) $y = \frac{cx+d}{ax}$, where VA=0 and HA≠0. $\widetilde{\beta^*} \equiv 1 - \beta^*$ and $\widetilde{\alpha^*} \equiv 1 - \alpha^*$ are not always needed for graphing. Also, see Figure 4 for the G sector.

sets 'hyperbolic_all.gps.' There are five types of $y = \frac{cx+d}{ax+b}$ in hyperbolas (see Note 4): If a=0, $y = \frac{cx+d}{b}$; if b=0, $y = \frac{cx+d}{ax}$; if c=0, $y = \frac{d}{ax+b}$; if d=0, $y = \frac{cx}{ax+b}$; and if c=d=0, $y = \frac{1}{ax+b}$.

Look at Figures 2 and 3. First of all, a hyperbola stays at the 1st and 4th quadrants, differently from parabolic convex or concave. At the current endogenous net investment, 2010, the rate of return in equilibrium shows minus at most developed countries. The rate of return never rides over the 3rd quadrant since a minus net investment implies a bankruptcy or default of a country (historically, see Reinhart Carmen. M., and Rogoff, Kenneth, S., 2011). When a hyperbola stays at the 1st and 4th quadrant, the rate of inflation or deflation is the same, regardless of whether the rate of return is plus or minus. This is the characteristic of $r^*(i)$. The same is true at $r_G^*(i_G)$ at the G sector.

Figure 4 shows $r_G^*(i_G)$, for comparison: The G sector fluctuates much more than the PRI sector and the total economy. Policy-makers in reality must compare $r_G^*(i_G)$ with $r_{PRI}^*(i_{PRI})$ at the PRI sector. Public/ government investment is often huge at the young economic stage while foreign direct investment must be steady at the PRI sector.

Technology-oriented $\beta^*(i)$ has the same characteristic as $r^*(i)$. $\beta^*(i)$, $\beta_G^*(i_G)$, and $\beta_{PRI}^*(i_{PRI})$ are most influentially related to dynamic balance between the G and PRI sector in the long run. Upon technological progress, as a result, it is possible for policy-makers to adjust an integrated set of policies by country in the long run.

For severe evidences, back to Figures 2 and 3, to inspect surprising differences by country for twelve countries. These differences show a reporting by country. The horizontal asymptote of $HA_{r^*(i)}$ differs surprisingly by country. This fact not only shows the problem of $r^*(i)$ to inflation or deflation but also the results of an integrated set of policies and sustainable level of growth power by country. For $r^* - HA_{r^*(i)}$, as the endogenous rate of inflation or deflation, it is proved that the differences between $r^* - HA_{r^*(i)}$ and the consumers price index, CPI, and other external indicators are not so much in spite of the national taste, culture, and history. Then, why do the level of an integrate set of policies differ so much between countries? A reason is the differences of leadership, speed of decision-making, and the behaviors to votes and democracy, as scientifically estimated by the current econometric methodology.

The KEWT database accurately proves by country the neutrality of the financial assets to the real assets with evidences of endogenous values and ratios and external items such as the exchange rate, ten year debt yield, money supply, *CPI*, and others available at *IFSY*, IMF. Therefore, an integrated set of policies has bright future in reality when an integrated set of policies becomes alive.

5.4 Conclusions

Could the endogenous system and its KEWT database solve problems related to fiscal policy and repeating bubbles? A condition is required: The price-equilibrium is replaced by the endogenous-equilibrium. The price-equilibrium partially holds by market, but it is difficult to consistently measure the price level by year and over years. The endogenous-equilibrium contrarily holds wholly as a system by country and with seven endogenous parameters and all the variables by country, sector, and year and over years. The goal of the endogenous system is a balanced moderate equilibrium and its sustainable robust policies. And, policy-results are each by each measured at the KEWT database, with what is required urgently by country

This chapter focused two: the cost of capital and the hyperbola of the rate of return to net investment to output in equilibrium. An optimum range of this hyperbola is another expression of a balanced moderate equilibrium. An optimum range explains the ground of the endogenous cost of capital and clarifies the situation brought by fiscal policy. Fiscal policy has been a sister of financial and market policies but now, a core or mater of an integrated set of policies to the real and financial assets when the endogenous-system reinforces the current worldwide databases available today. The minus interest rate, the deflation rate, bubbles, and no growth and returns, all of these are results. Do not stick to results but remove true causes. Causes are finally expressed by seven endogenous parameters. These parameters must be within a range of moderation and be controllable by policy-makers. A conclusion: Execute and solved.

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original paper was published at *FEI*, Amsterdam, Sep 2011. Peter is brave and we recollect the discussions deepened at Amsterdam.

For readers' convenience: contents of tables and figures hereunder

Chapter 5

Table CC1 Endogenous inflation/deflation and the cost of capital by sector: the US, Australia, Japan, 1990-2010

Cost of capit	HAr*(i)	r*-HAr*(i)	v*=r*/(r*-gY	CC*REAL	CC*REAL(G)	C*REAL(PRI	CC*NOMINA	CC*NOMI(G)	CC*NOMI(P)
1. The US	max. endo. in	REAL	to bubbles	*REAL*	G	PRI	*NOMINAL*	G	PRI
1990	0.0258	0.0480	1.31	0.0367	(0.0767)	0.0594	0.0564	(0.1628)	0.0849
1991	0.0174	0.0499	1.37	0.0365	(0.1143)	0.0646	0.0492	(0.2021)	0.0822
1992	0.0169	0.0565	1.31	0.0431	(0.1144)	0.0756	0.0559	(0.2067)	0.0910
1993	0.0295	0.0370	1.55	0.0239	(0.0454)	0.0468	0.0430	(0.1531)	0.0710
1994	0.0360	0.0288	1.74	0.0166	(0.0253)	0.0305	0.0373	(0.1024)	0.0585
1995	0.0293	0.0293	1.68	0.0174	(0.0147)	0.0299	0.0349	(0.0617)	0.0488
1996	0.0314	0.0249	1.88	0.0132	(0.0130)	0.0196	0.0299	(0.0441)	0.0406
1997	0.0099	0.0423	3.26	0.0129	0.0077	0.0148	0.0160	0.0144	0.0166
1998	0.0326	0.0177	3.52	0.0050	0.0133	0.0036	0.0143	0.0448	0.0099
1999	0.0355	0.0141	7.74	0.0018	0.0184	(0.0014)	0.0064	0.0801	(0.0046)
2000	0.0376	0.0126	12.67	0.0010	0.0331	(0.0033)	0.0040	0.1184	(0.0135)
2001	0.0409	0.0180	2.55	0.0071	0.0185	0.0051	0.0231	0.0688	0.0161
2002	0.0470	0.0276	1.60	0.0172	(0.0223)	0.0224	0.0466	(0.0528)	0.0618
2003	0.0510	0.0305	1.48	0.0206	(0.0355)	0.0329	0.0550	(0.1220)	0.0830
2004	0.0554	0.0278	1.54	0.0181	(0.0232)	0.0317	0.0541	(0.1160)	0.0826
2005	0.0604	0.0305	1.47	0.0208	(0.0178)	0.0323	0.0619	(0.0797)	0.0864
2006	0.0570	0.0202	1.94	0.0104	(0.0111)	0.0153	0.0399	(0.0517)	0.0560
2007	0.0484	0.0147	2.95	0.0050	0.0007	0.0080	0.0214	0.0069	0.0250
2008	0.0505	0.0203	1.92	0.0106	(0.0040)	0.0337	0.0369	(0.0439)	0.0562
2009	(0.1513)	0.2638	1.04	0.2542	(0.0071)	(0.0296)	0.1084	(0.1497)	0.1967
2010	0.0174	0.0868	1.12	0.0774	(0.0059)	(0.0301)	0.0928	(0.1067)	0.1802
Cost of capit	HAr*(i)	r*-HAr*(i)	v*=r*/(r*-gY	CC*REAL	CC*REAL(G)	C*REAL(PRI	CC*NOMINA	CC*NOMI(G)	CC*NOMI(P)
3. Australi	max. endo. in	REAL	to bubbles	*REAL*	G	PRI	*NOMINAL*	G	PRI
1990	0.0466	0.0177	6.27	0.0028	(0.4191)	(0.0014)	0.0103	0.1509	(0.0058)
1991	0.0384	0.0803	1.19	0.0674	0.0165	0.0489	0.0997	(0.0428)	0.1048
1992	0.0500	0.0652	1.23	0.0531	0.7526	0.0555	0.0938	(0.2997)	0.1171
1993	0.0608	0.0398	1.35	0.0295	(0.2474)	0.0384	0.0745	(0.3763)	0.1029
1994	0.0660	0.0229	1.80	0.0128	(0.1387)	0.0175	0.0494	(0.3190)	0.0720
1995	0.0398	0.0513	1.32	0.0390	(0.0841)	0.0548	0.0692	(0.2228)	0.0900
1996	0.0397	0.0415	1.42	0.0293	(0.0206)	0.0363	0.0574	(0.0573)	0.0664
1997	0.0411	0.0382	1.43	0.0268	0.0292	0.0274	0.0555	0.0777	0.0544
1998	0.0537	0.0137	5.79	0.0024	0.0626	(0.0035)	0.0117	0.3618	(0.0166)
1999	0.0573	0.0153	3.73	59.6022	0.0072	0.0041	0.0195	0.0459	0.0184
2000	0.0511	0.0153	4.13	0.0037	0.0302	0.0009	0.0161	0.1471	0.0037
2001	0.0485	0.0206	2.40	0.0086	0.0378	0.0056	0.0288	0.1295	0.0186
2002	0.0514	0.0167	3.47	0.0048	0.0405	0.0016	0.0196	0.1421	0.0065
2003	0.0506	0.0138	8.95	0.0015	0.0361	(0.0022)	0.0072	0.1710	(0.0104)
2004	0.0513	0.0133	11.48	0.0012	0.0434	(0.0026)	0.0056	0.1706	(0.0130)
2005	0.0427	0.0145	(10.19)	(0.0014)	0.0492	(0.0074)	(0.0056)	0.2019	(0.0291)
2006	0.0557	0.0000	253.78	0.0000	0.0001	(0.0000)	0.0002	0.2431	(0.0286)
2007	0.0449	0.0088	(4.74)	(0.0019)	0.0368	(0.0066)	(0.0113)	0.2252	(0.0402)
2008	0.0442	0.0080	(3.10)	(0.0026)	30.5278	(0.0052)	(0.0168)	0.1554	(0.0393)
2009	0.0395	0.0099	(17.58)	(0.0006)	(0.0067)	0.0003	(0.0028)	(0.0384)	0.0017
2010	0.0380	0.0092	(7.84)	(0.0012)	(0.0077)	0.0009	(0.0060)	(0.0676)	0.0040
Cost of capit	HAr*(i)	r*-HAr*(i)	v*=r*/(r*-gY	CC*REAL	CC*REAL(G)	C*REAL(PRI	CC*NOMINA	CC*NOMI(G)	CC*NOMI(P)
10. Japan	max. endo. in	REAL	to bubbles	*REAL*	G	PRI	*NOMINAL*	G	PRI
1990	0.0749	0.0043	4.64	0.0009	(0.0034)	0.0031	0.0171	(0.0709)	0.0540
1991	0.0744	0.0042	3.86	0.0011	(0.0023)	0.0035	0.0204	(0.0608)	0.0548
1992	0.0601	0.0047	3.14	0.0015	(0.0027)	0.0052	0.0206	(0.0578)	0.0552
1993	0.0433	0.0040	4.25	0.0009	(0.0028)	0.0047	0.0111	(0.0550)	0.0412
1994	0.0351	0.0041	5.80	0.0007	(0.0034)	0.0049	0.0068	(0.0525)	0.0345
1995	0.0329	0.0032	8.55	0.0004	(0.0031)	0.0034	0.0042	(0.0504)	0.0312
1996	0.0296	0.0030	12.96	0.0002	(0.0032)	0.0032	0.0025	(0.0478)	0.0279
1997	0.0328	0.0022	5.81	0.0004	(0.0019)	0.0020	0.0060	(0.0377)	0.0285
1998	0.0245	0.0030	2.74	0.0011	(0.0059)	0.0186	0.0100	(0.1153)	0.0767
1999	0.0246	0.0038	1.76	0.0022	(0.0060)	0.0138	0.0161	(0.0756)	0.0662
2000	0.0241	0.0028	2.40	0.0012	(0.0048)	0.0069	0.0112	(0.0636)	0.0525
2001	0.0251	0.0043	1.58	0.0027	(0.0048)	0.0163	0.0186	(0.0610)	0.0630
2002	0.0225	0.0107	1.16	0.0092	(0.0244)	0.0249	0.0286	(0.0665)	0.0823
2003	0.0185	0.0155	1.09	0.0142	(0.1100)	0.0289	0.0312	(0.0677)	0.0869
2004	0.0242	0.0067	1.16	0.0058	(0.0053)	0.1175	0.0265	(0.0652)	0.0784
2005	0.0272	0.0034	1.19	0.0028	(0.0039)	0.0116	0.0256	(0.0565)	0.0723
2006	0.0303	0.0002	1.15	0.0002	0.0000	0.0001	0.0265	(0.0145)	0.0501
2007	0.0323	(0.0032)	1.14	(0.0028)	(0.0012)	(0.0021)	0.0255	(0.0313)	0.0562
2008	0.0345	(0.0043)	1.25	(0.0034)	(0.0012)	(0.0022)	0.0242	(0.0361)	0.0552
2009	0.0336	(0.0041)	1.33	(0.0031)	0.0021	0.0092	0.0222	(0.0787)	0.0741
2010	0.0293	(0.0033)	1.63	(0.0020)	0.0025	0.0215	0.0160	(0.0754)	0.0653

Data source: KEWT 6.12-1, -2, -3, and -4, by country and sector, 1990-2010, whose original data are from *International Financial Statistics Yearbook*, IMF

Table CC2 Endogenous inflation/deflation and the cost of capital by sector: France, Germany, the UK, 1990-2010

Cost of capit	HAr*(i)	r*-HAr*(i)	v*=r*/(r*-gY	CC*REAL	CC*REAL(G)	CC*REAL(PR	CC*NOMIN	CC*NOMI(G)	CC*NOMI(P)
4. France	max. endo. in	REAL	to bubbles	*REAL*	G	PRI	*NOMINAL*	G	PRI
1990	0.0645	0.0087	2.7096	0.0032	(0.0273)	0.0049	0.0270	(0.4663)	0.0366
1991	0.0636	0.0107	2.1093	0.0051	(0.0009)	0.0064	0.0352	(0.0116)	0.0396
1992	0.0642	0.0144	1.6374	0.0088	(0.0409)	0.0182	0.0480	(0.5962)	0.0765
1993	0.0659	0.0264	1.2270	0.0215	(0.1223)	0.0443	0.0752	(0.9982)	0.1244
1994	0.0675	0.0177	1.3247	0.0134	(0.0332)	0.0413	0.0643	(0.6057)	0.1107
1995	0.0727	0.0258	1.2511	0.0206	(0.0840)	0.0483	0.0788	(0.7174)	0.1388
1996	0.0737	0.0320	1.1271	0.0284	(0.0999)	0.0529	0.0938	(0.5863)	0.1468
1997	0.0651	0.0273	1.1274	0.0242	(0.0455)	0.0475	0.0819	(0.3465)	0.1187
1998	0.0703	0.0126	1.2769	0.0099	(0.0304)	0.0143	0.0649	(0.2352)	0.0911
1999	0.0611	0.0116	1.3888	0.0083	(0.0113)	0.0123	0.0523	(0.1048)	0.0696
2000	0.0639	0.0146	1.4081	0.0104	(0.0188)	0.0132	0.0558	(0.0960)	0.0718
2001	0.0604	0.0088	2.3453	0.0038	(0.0020)	0.0042	0.0295	(0.0135)	0.0337
2002	0.0566	0.0124	1.9603	0.0063	(0.0113)	0.0112	0.0352	(0.1020)	0.0541
2003	0.0561	0.0137	1.8622	0.0074	(0.0397)	0.0131	0.0375	(0.1983)	0.0672
2004	0.0595	0.0199	1.5014	0.0132	(0.0331)	0.0212	0.0528	(0.1568)	0.0809
2005	0.0638	0.0162	1.6282	0.0100	(0.0173)	0.0141	0.0492	(0.0912)	0.0685
2006	0.0591	0.0124	1.9089	0.0065	(0.0104)	0.0087	0.0375	(0.0578)	0.0507
2007	0.0567	0.0087	2.7626	0.0031	(0.0044)	0.0049	0.0237	(0.0426)	0.0346
2008	0.0561	0.0088	2.5498	0.0035	(0.0054)	0.0068	0.0255	(0.0645)	0.0423
2009	0.0612	0.0144	1.5082	0.0095	(0.0114)	0.0639	0.0501	(0.2058)	0.1060
2010	0.0633	0.0135	1.5518	0.0087	(0.0124)	0.0348	0.0495	(0.1799)	0.1042
Cost of capit	HAr*(i)	r*-HAr*(i)	v*=r*/(r*-gY	CC*REAL	CC*REAL(G)	CC*REAL(PR	CC*NOMIN	CC*NOMI(G)	CC*NOMI(P)
5. German	max. endo. in	REAL	to bubbles	*REAL*	G	PRI	*NOMINAL*	G	PRI
1990	0.0466	0.0115	4.0779	0.0028	(0.0064)	0.0047	0.0142	(0.0477)	0.0219
1991	0.0532	0.0121	2.8221	0.0043	(0.0236)	0.0071	0.0231	(0.1250)	0.0387
1992	0.0556	0.0134	2.2274	0.0060	(0.0392)	0.0094	0.0310	(0.1590)	0.0506
1993	0.0546	0.0204	1.6074	0.0127	(0.0344)	0.0196	0.0466	(0.1532)	0.0694
1994	0.0606	0.0055	1.9832	0.0028	(0.0190)	0.0034	0.0333	(0.0898)	0.0451
1995	0.0648	0.0065	1.8943	0.0034	(0.0156)	0.0045	0.0376	(0.1105)	0.0527
1996	0.0655	0.0085	1.5608	0.0055	(0.0209)	0.0073	0.0474	(0.1347)	0.0668
1997	0.0688	0.0013	1.5975	0.0008	(0.0048)	0.0009	0.0439	(0.0903)	0.0569
1998	0.0637	0.0013	1.8425	0.0007	(0.0005)	0.0009	0.0353	(0.0261)	0.0421
1999	0.0665	0.0009	1.6718	0.0005	(0.0006)	0.0007	0.0403	(0.0550)	0.0510
2000	0.0669	0.0015	1.6544	0.0009	(0.0007)	0.0012	0.0414	(0.0376)	0.0506
2001	0.0642	0.0027	1.4592	0.0019	(0.0035)	0.0032	0.0458	(0.1436)	0.0691
2002	0.0576	0.0042	1.3038	0.0032	(0.0087)	0.0061	0.0474	(0.2088)	0.0792
2003	0.0566	0.0042	1.3541	0.0031	(0.0093)	0.0063	0.0449	(0.2247)	0.0796
2004	0.0521	0.0031	1.3027	0.0024	(0.0049)	0.0059	0.0424	(0.2050)	0.0764
2005	0.0532	0.0028	1.1517	0.0024	(0.0030)	0.0066	0.0486	(0.1816)	0.0814
2006	0.0580	(0.0019)	1.1488	(0.0016)	0.0008	(0.0040)	0.0489	(0.0786)	0.0682
2007	0.0636	(0.0045)	1.1561	(0.0039)	(0.0005)	(0.0046)	0.0511	0.0090	0.0574
2008	0.0650	(0.0047)	1.2595	(0.0037)	(0.0009)	(0.0043)	0.0479	0.0140	0.0531
2009	0.0644	(0.0075)	1.1717	(0.0064)	0.0077	(0.0145)	0.0486	(0.1409)	0.0783
2010	0.0629	(0.0060)	1.2868	(0.0047)	0.0050	(0.0141)	0.0443	(0.1405)	0.0759
Cost of capit	HAr*(i)	r*-HAr*(i)	v*=r*/(r*-gY	CC*REAL	CC*REAL(G)	CC*REAL(PR	CC*NOMIN	CC*NOMI(G)	CC*NOMI(P)
6. the U K	max. endo. in	REAL	to bubbles	*REAL*	G	PRI	*NOMINAL*	G	PRI
1990	0.0671	0.0037	1.7261	0.0022	0.0019	0.0022	0.0410	0.0286	0.0452
1991	0.0764	0.0081	1.2733	0.0064	(0.0017)	0.0088	0.0664	(0.0166)	0.0946
1992	0.0793	0.0168	1.1561	0.0145	(0.0207)	0.0269	0.0831	(0.1210)	0.1526
1993	0.0795	0.0221	1.1443	0.0193	(0.0140)	0.0752	0.0888	(0.1494)	0.1734
1994	0.0724	0.0196	1.1652	0.0168	(0.0112)	0.0614	0.0790	(0.1189)	0.1516
1995	0.0737	0.0093	1.4269	0.0065	(0.0060)	0.0238	0.0582	(0.1138)	0.1247
1996	0.0741	0.0090	1.4435	0.0062	(0.0053)	0.0147	0.0576	(0.0746)	0.1100
1997	0.0638	0.0103	1.6718	0.0061	(0.0037)	0.0119	0.0443	(0.0348)	0.0760
1998	0.0646	0.0057	1.9204	0.0030	0.0032	0.0030	0.0366	0.0235	0.0423
1999	0.0764	0.0077	1.6700	0.0046	0.0093	0.0042	0.0504	0.0374	0.0557
2000	0.0805	0.0104	1.5236	0.0068	0.0140	0.0060	0.0597	0.0494	0.0636
2001	0.0805	0.0123	1.4664	0.0084	0.0095	0.0082	0.0633	0.0392	0.0717
2002	0.0785	0.0141	1.4274	0.0099	(0.0045)	0.0148	0.0649	(0.0290)	0.0974
2003	0.0767	0.0154	1.4424	0.0107	(0.0061)	0.0223	0.0639	(0.0567)	0.1071
2004	0.0792	0.0159	1.4393	0.0111	(0.0076)	0.0205	0.0661	(0.0570)	0.1110
2005	0.0845	0.0187	1.3656	0.0137	(0.0079)	0.0345	0.0755	(0.0770)	0.1341
2006	0.0902	0.0205	1.3506	0.0151	(0.0193)	0.0200	0.0819	(0.0488)	0.1302
2007	0.0862	0.0214	1.3279	0.0161	(0.0097)	0.0245	0.0810	(0.0445)	0.1274
2008	0.0823	0.0323	1.2017	0.0269	(0.0241)	0.0499	0.0953	(0.0978)	0.1672
2009	0.0739	0.0470	1.1341	0.0414	(0.0698)	0.1164	0.1066	(0.2600)	0.2453
2010	0.0846	0.0382	1.1632	0.0328	(0.0945)	0.0687	0.1056	(0.2465)	0.2377

Data source: KEWT 6.12-1, -2, -3, and -4, by country and sector, 1990-2010, whose original data are from *International Financial Statistics Yearbook*, IMF

Table CC3 Endogenous inflation/deflation and the cost of capital by sector: China, India, Brazil, 1990-2010

Cost of capit	HAr*(i)	r*-HAr*(i)	v*=r*/(r*-gY	CC*REAL	CC*REAL(G)	CC*REAL(PRI	CC*NOMIN	CC*NOMI(G)	CC*NOMI(P)
7. China	max. endo. in	REAL	to bubbles	*REAL*	G	PRI	*NOMINAL*	G	PRI
1990	0.1747	0.0048	4.21	0.0011	0.0016	0.0011	0.0426	0.0718	0.0409
1991	0.1567	0.0167	4.59	0.0036	0.0038	0.0037	0.0377	0.0504	0.0376
1992	0.1579	0.0142	5.59	0.0025	0.0029	0.0025	0.0308	0.0344	0.0303
1993	0.1836	0.0132	7.53	0.0018	0.0038	0.0015	0.0262	0.0537	0.0227
1994	0.2010	0.0143	4.74	0.0030	0.0024	0.0031	0.0454	0.0360	0.0465
1995	0.2183	0.0144	3.77	0.0038	0.0279	0.0034	0.0618	0.6372	0.0520
1996	0.2025	0.0140	4.01	0.0035	0.0134	0.0030	0.0540	0.2977	0.0449
1997	0.1917	0.0144	3.34	0.0043	0.0079	0.0041	0.0617	0.1276	0.0581
1998	0.1678	0.0127	3.58	0.0036	0.0036	0.0036	0.0505	0.0547	0.0505
1999	0.1478	0.0094	4.52	0.0021	(0.0004)	0.0023	0.0348	(0.0073)	0.0386
2000	0.1359	0.0101	5.28	0.0019	(0.0029)	0.0024	0.0277	(0.0408)	0.0340
2001	0.1321	0.0093	5.73	0.0016	(0.0034)	0.0019	0.0247	(0.0422)	0.0302
2002	0.1325	0.0089	5.60	0.0016	(0.0031)	0.0020	0.0252	(0.0453)	0.0318
2003	0.1400	0.0083	5.85	0.0014	(0.0015)	0.0017	0.0253	(0.0237)	0.0299
2004	0.1514	0.0083	5.49	0.0015	0.0003	0.0016	0.0291	0.0054	0.0307
2005	0.1567	0.0087	4.20	0.0021	0.0005	0.0022	0.0394	0.0079	0.0420
2006	0.1626	0.0089	3.61	0.0025	0.0014	0.0025	0.0475	0.0226	0.0495
2007	0.1718	0.0074	6.98	0.0011	0.0048	0.0008	0.0257	0.0661	0.0194
2008	0.1651	0.0072	7.23	0.0010	0.0021	0.0009	0.0239	0.0379	0.0213
2009	0.1638	0.0073	7.36	0.0010	(0.0003)	0.0012	0.0233	(0.0083)	0.0271
2010	0.1640	0.0071	7.42	0.0010	(0.0000)	0.0010	0.0231	(0.0006)	0.0252
Cost of capit	HAr*(i)	r*-HAr*(i)	v*=r*/(r*-gY	CC*REAL	CC*REAL(G)	CC*REAL(PRI	CC*NOMIN	CC*NOMI(G)	CC*NOMI(P)
8. India	max. endo. in	REAL	to bubbles	*REAL*	G	PRI	*NOMINAL*	G	PRI
1990	0.0586	0.0216	1917.09	0.0000	(0.0296)	0.0284	0.0000	(0.1887)	0.0810
1991	0.0594	0.0222	10.60	0.0021	(0.0230)	0.0231	0.0077	(0.1303)	0.0698
1992	0.0659	0.0199	(1479.15)	(0.0000)	(0.0221)	0.0150	(0.0001)	(0.1245)	0.0580
1993	0.0687	0.0213	15.99	0.0013	(0.0261)	0.0247	0.0056	(0.1638)	0.0871
1994	0.0936	0.0232	7.20	0.0032	(0.0157)	0.0187	0.0162	(0.1149)	0.0790
1995	0.0418	0.0549	3.00	0.0183	(0.0359)	0.0948	0.0322	(0.1223)	0.1087
1996	0.0472	0.0568	2.63	0.0216	(0.0348)	0.1026	0.0396	(0.1178)	0.1258
1997	0.0665	0.0316	2.68	0.0118	(0.0338)	0.0316	0.0366	(0.0783)	0.1077
1998	0.0814	0.0404	1.81	0.0224	(0.0383)	0.0515	0.0674	(0.0998)	0.1630
1999	0.1153	0.0210	6.37	0.0033	(0.0257)	0.0110	0.0214	(0.0935)	0.0814
2000	0.1033	0.0205	6.46	0.0032	(0.0216)	0.0111	0.0192	(0.1009)	0.0716
2001	0.0938	0.0197	7.39	0.0027	(0.0190)	0.0111	0.0154	(0.1071)	0.0642
2002	0.1054	0.0208	5.13	0.0040	(0.0162)	0.0125	0.0246	(0.1051)	0.0744
2003	0.1313	0.0225	3.67	0.0061	(0.0086)	0.0126	0.0420	(0.0665)	0.0827
2004	0.1286	0.0203	4.69	0.0043	(0.0042)	0.0090	0.0318	(0.0423)	0.0585
2005	0.0908	0.0208	3.98	0.0052	(0.0058)	0.0132	0.0281	(0.0479)	0.0572
2006	0.0992	0.0192	4.75	0.0040	(0.0051)	0.0106	0.0250	(0.0469)	0.0536
2007	0.1047	0.0176	6.23	0.0028	(0.0039)	0.0066	0.0196	(0.0333)	0.0421
2008	0.1007	0.0163	8.38	0.0019	(0.0076)	0.0107	0.0140	(0.0866)	0.0589
2009	0.0973	0.0165	6.78	0.0024	(0.0089)	0.0126	0.0168	(0.0900)	0.0702
2010	0.1043	0.0177	4.50	0.0039	(0.0064)	0.0113	0.0271	(0.0547)	0.0698
Cost of capit	HAr*(i)	r*-HAr*(i)	v*=r*/(r*-gY	CC*REAL	CC*REAL(G)	CC*REAL(PRI	CC*NOMIN	CC*NOMI(G)	CC*NOMI(P)
3. Brazil	max. endo. in	REAL	to bubbles	*REAL*	G	PRI	*NOMINAL*	G	PRI
1990	0.3999	0.0444	1.62	0.0275	(0.0291)	0.0402	0.2749	(0.3193)	0.3912
1991	1.2465	0.0541	1.43	0.0379	0.0068	0.0464	0.9105	0.1508	1.1497
1992	0.7364	0.0420	1.59	0.0264	0.0009	0.0334	0.4898	0.0157	0.6405
1993	0.5662	0.0350	1.73	0.0202	(0.0065)	0.0288	0.3468	(0.1874)	0.4237
1994	0.5694	0.0361	1.65	0.0218	(0.0063)	0.0287	0.3662	(0.1204)	0.4623
1995	0.0758	0.0522	56.73	0.0009	(0.0243)	0.0078	0.0023	(0.0934)	0.0172
1996	0.1035	0.0170	9.34	0.0018	(0.0140)	0.0062	0.0129	(0.1532)	0.0392
1997	0.0910	0.0160	51.07	0.0003	(0.0146)	0.0075	0.0021	(0.1854)	0.0404
1998	0.0743	0.0151	1180.18	0.0000	(0.0178)	0.0090	0.0001	(0.1849)	0.0436
1999	0.0637	0.0128	(6.06)	(0.0021)	(0.0051)	(0.0006)	(0.0126)	(0.0501)	(0.0029)
2000	0.0648	0.0126	(6.81)	(0.0019)	0.0035	(0.0039)	(0.0114)	0.0271	(0.0222)
2001	0.0525	0.0114	(3.92)	(0.0029)	0.0014	(0.0066)	(0.0163)	0.0145	(0.0271)
2002	0.0569	0.0133	(22.72)	(0.0006)	0.0028	(0.0035)	(0.0031)	0.0249	(0.0141)
2003	0.0644	0.0149	10.43	0.0014	(0.0079)	0.0076	0.0076	(0.0619)	0.0335
2004	0.0917	0.0174	3.75	0.0047	(0.0006)	0.0074	0.0291	(0.0047)	0.0421
2005	0.0797	0.0154	4.60	0.0034	(0.0039)	0.0088	0.0207	(0.0365)	0.0440
2006	0.0814	0.0141	4.77	0.0030	(0.0003)	0.0053	0.0200	(0.0031)	0.0287
2007	0.0935	0.0132	4.68	0.0028	0.0004	0.0038	0.0228	0.0024	0.0326
2008	0.1107	0.0124	4.69	0.0026	(0.0012)	0.0048	0.0262	(0.0142)	0.0440
2009	0.0624	0.0090	(72.65)	(0.0001)	(0.0019)	0.0008	(0.0010)	(0.0166)	0.0059
2010	0.0785	0.0091	23.05	0.0004	0.0020	(0.0000)	0.0038	0.0151	(0.0005)

Data source: KEWT 6.12-1, -2, -3, and -4, by country and sector, 1990-2010, whose original data are *International Financial Statistics Yearbook*, IMF

Table CC4 Endogenous inflation/deflation and the cost of capital by sector: Mexico, Russia, South Africa, 1990-2010

Cost of capit.	HAr*(i)	r*-HAr*(i)	v*=r*/(r*-gY	CC*REAL	CC*REAL(G)	C*REAL(PRI	CC*NOMIN.	CC*NOMI(G)	CC*NOMI(P)
5. Mexico	max. endo. in	REAL	to bubbles	*REAL*	G	PRI	*NOMINAL*	G	PRI
1990	0.4358	0.0505	1.62	0.0312	(0.0132)	0.1284	0.3009	(0.0776)	1.4331
1991	0.3079	0.0391	1.93	0.0203	0.0268	0.0211	0.1798	0.1828	0.2018
1992	0.1294	0.0284	25.14	0.0011	0.0684	(0.0182)	0.0063	0.2343	(0.1126)
1993	0.1114	0.0206	11.09	0.0019	0.0119	(0.0019)	0.0119	0.0673	(0.0125)
1994	0.0977	0.0184	(77.38)	(0.0002)	0.0075	(0.0026)	(0.0015)	0.0410	(0.0173)
1995	0.1805	0.0255	2.64	0.0096	0.0069	0.0099	0.0780	0.0705	0.0755
1996	0.2303	0.0313	2.40	0.0130	0.0096	0.0140	0.1088	0.0861	0.1152
1997	0.2367	0.0254	2.60	0.0098	0.0026	0.0120	0.1010	0.0281	0.1224
1998	0.1332	0.0187	10.49	0.0018	0.0008	0.0018	0.0145	0.0076	0.0137
1999	0.1234	0.0179	8.77	0.0020	0.0012	0.0016	0.0161	0.0140	0.0116
2000	0.1165	0.0159	12.35	0.0013	0.0022	(0.0002)	0.0107	0.0271	(0.0011)
2001	0.0797	0.0128	(35.11)	(0.0004)	0.0026	(0.0026)	(0.0026)	0.0259	(0.0167)
2002	0.0753	0.0117	(47.02)	(0.0002)	(0.0008)	(0.0006)	(0.0018)	(0.0095)	(0.0040)
2003	0.0977	0.0120	12.89	0.0009	0.0010	0.0005	0.0085	0.0119	0.0046
2004	0.1566	0.0167	2.67	0.0063	0.0013	0.0086	0.0648	0.0197	0.0779
2005	0.0961	0.0112	12.70	0.0009	0.0014	(0.0002)	0.0085	0.0197	(0.0015)
2006	0.1130	0.0122	6.34	0.0019	(0.0004)	0.0029	0.0197	(0.0052)	0.0274
2007	0.1069	0.0118	7.20	0.0016	(0.0015)	0.0029	0.0165	(0.0153)	0.0295
2008	0.1009	0.0112	8.97	0.0012	(0.0002)	0.0017	0.0125	(0.0020)	0.0159
2009	0.0745	0.0100	35.24	0.0003	(0.0015)	0.0011	0.0024	(0.0159)	0.0082
2010	0.0903	0.0108	8.09	0.0013	(0.0018)	0.0030	0.0125	(0.0221)	0.0253
Cost of capit.	HAr*(i)	r*-HAr*(i)	v*=r*/(r*-gY	CC*REAL	CC*REAL(G)	C*REAL(PRI	CC*NOMIN.	CC*NOMI(G)	CC*NOMI(P)
7. Russia	max. endo. in	REAL	to bubbles	*REAL*	G	PRI	*NOMINAL*	G	PRI
1990									
1991									
1992									
1993									
1994									
1995	0.0306	(0.0008)	(0.7875)	0.0010	0.0031	(0.0003)	(0.0378)	(0.1041)	0.0109
1996	0.0366	(0.0007)	(1.0749)	0.0006	0.0022	(0.0015)	(0.0335)	(0.1762)	0.0631
1997	0.0357	(0.0037)	(1.4261)	0.0026	0.0217	(0.0100)	(0.0225)	(0.1815)	0.0887
1998	0.0455	(0.0066)	1.5648	(0.0042)	0.0158	(0.0386)	0.0249	(0.1629)	0.1548
1999	0.1389	(0.0257)	1.1314	(0.0227)	0.0021	(0.2135)	0.1001	(0.0306)	0.1862
2000	0.6848	(0.0365)	1.1117	(0.0328)	(0.0262)	(0.0378)	0.5832	0.2592	0.7804
2001	0.4864	(0.0224)	1.2376	(0.0181)	(0.0357)	(0.0158)	0.3749	0.3635	0.3842
2002	0.3985	(0.0233)	1.2595	(0.0185)	(0.0322)	(0.0168)	0.2979	0.2407	0.3188
2003	0.4095	(0.0205)	1.3305	(0.0154)	(0.0279)	(0.0130)	0.2924	0.3638	0.2707
2004	0.4125	(0.0200)	1.3433	(0.0149)	(0.0399)	(0.0096)	0.2922	0.6274	0.1981
2005	0.4045	(0.0207)	1.3020	(0.0159)	(0.0518)	(0.0070)	0.2948	0.8804	0.1339
2006	0.3832	(0.0167)	1.3666	(0.0122)	(0.0602)	(0.0050)	0.2682	0.8612	0.1203
2007	0.3133	(0.0114)	1.5689	(0.0073)	(0.0345)	(0.0024)	0.1924	0.7194	0.0662
2008	0.3113	(0.0103)	1.6015	(0.0064)	(0.0224)	(0.0032)	0.1879	0.5743	0.0951
2009	0.1820	(0.0114)	1.4793	(0.0077)	0.0034	(0.0196)	0.1154	(0.1094)	0.1851
2010	0.3267	(0.0130)	1.3762	(0.0094)	0.0016	(0.0203)	0.2279	(0.0673)	0.3410
Cost of capit.	HAr*(i)	r*-HAr*(i)	v*=r*/(r*-gY	CC*REAL	CC*REAL(G)	C*REAL(PRI	CC*NOMIN.	CC*NOMI(G)	CC*NOMI(P)
18. S. Afric	max. endo. in	REAL	to bubbles	*REAL*	G	PRI	*NOMINAL*	G	PRI
1990	0.0735	0.1550	1.88	0.0822	(0.4173)	0.1650	0.1212	(0.4894)	0.2572
1991	0.1392	0.0768	1.54	0.0498	(0.3614)	0.0902	0.1400	(0.5859)	0.2828
1992	0.1437	0.0614	1.53	0.0401	(0.2110)	0.1030	0.1340	(0.7787)	0.3340
1993	0.1399	0.0465	1.81	0.0256	(0.2178)	0.0648	0.1027	(0.7035)	0.2738
1994	0.1302	0.0394	2.20	0.0179	(0.1167)	0.0613	0.0772	(0.6144)	0.2472
1995	0.1210	0.0357	3.40	0.0105	(0.1777)	0.0285	0.0461	(0.2985)	0.1473
1996	0.1757	0.0420	2.07	0.0203	(0.0666)	0.0525	0.1053	(0.2495)	0.2997
1997	0.1576	0.0221	2.10	0.0105	(0.0363)	0.0207	0.0856	(0.1631)	0.1939
1998	0.1283	0.0253	2.61	0.0097	(0.0185)	0.0182	0.0588	(0.0918)	0.1171
1999	0.1313	0.0241	2.69	0.0090	(0.0097)	0.0131	0.0578	(0.0425)	0.0923
2000	0.1258	0.0231	2.75	0.0084	(0.0065)	0.0129	0.0542	(0.0396)	0.0846
2001	0.1153	0.0230	2.86	0.0080	(0.0029)	0.0098	0.0483	(0.0105)	0.0654
2002	0.1193	0.0229	2.73	0.0084	(0.0042)	0.0098	0.0521	(0.0144)	0.0685
2003	0.0952	0.0182	4.37	0.0042	(0.0175)	0.0081	0.0260	(0.0869)	0.0533
2004	0.0892	0.0150	9.94	0.0015	(0.0084)	0.0036	0.0105	(0.0525)	0.0256
2005	0.0807	0.0135	12.86	0.0010	0.0049	0.0004	0.0073	0.0220	0.0031
2006	0.0764	0.0114	(22.87)	(0.0005)	0.0140	(0.0023)	(0.0038)	0.0644	(0.0196)
2007	0.0806	0.0094	(6.10)	(0.0015)	0.0147	(0.0043)	(0.0147)	0.1186	(0.0428)
2008	0.0850	0.0089	(6.94)	(0.0013)	0.0037	(0.0023)	(0.0135)	0.0385	(0.0246)
2009	0.0580	0.0089	201.20	0.0000	(0.0458)	0.0066	0.0003	(0.2586)	0.0531
2010	0.0624	0.0076	129.03	0.0001	(0.0356)	0.0034	0.0005	(0.1803)	0.0343

Data source: KEWT 6.12-1, -2, -3, and -4, by country and sector, 1990-2010, whose original data are *International Financial Statistics Yearbook*, IMF

Chapter 5

Table H5 Hyperbola elements, a, b, c, d, and $i = I/Y$ at $y = (cx + d)/ax$ formed for the rate of return, $r^*(i)$: the US, Australia, Japan, France, Germany, the UK, 1990- 2010

Pacific	a	b	c	d	i=I/Y	Pacific	a	b	c	d	i=I/Y
1. United States						**3. Australia**					
1990	0.0894	0.1248	(1.7939)	0.0354	0.0420	**1990**	0.2340	0.3498	(1.5821)	0.1158	0.1309
1991	0.0889	0.1251	(1.8087)	0.0362	0.0422	**1991**	0.0721	0.1030	(1.4288)	0.0310	0.0395
1992	0.0791	0.1121	(1.7319)	0.0330	0.0388	**1992**	0.0811	0.1173	(1.4147)	0.0362	0.0456
1993	0.1131	0.1618	(1.7420)	0.0487	0.0562	**1993**	0.1012	0.1491	(1.4362)	0.0480	0.0581
1994	0.1321	0.1907	(1.7163)	0.0586	0.0672	**1994**	0.1621	0.2408	(1.4699)	0.0788	0.0932
1995	0.1336	0.1874	(1.8937)	0.0538	0.0616	**1995**	0.0781	0.1165	(1.4477)	0.0384	0.0455
1996	0.1451	0.2056	(1.8637)	0.0604	0.0686	**1996**	0.0813	0.1240	(1.4286)	0.0427	0.0493
1997	0.1665	0.2385	(1.8425)	0.0720	0.0806	**1997**	0.0787	0.1214	(1.4029)	0.0427	0.0489
1998	0.1913	0.2757	(1.8278)	0.0843	0.0940	**1998**	0.2076	0.3226	(1.4349)	0.1150	0.1290
1999	0.2260	0.3283	(1.7947)	0.1023	0.1135	**1999**	0.2067	0.3164	(1.4588)	0.1096	0.1246
2000	0.2424	0.3526	(1.7821)	0.1103	0.1225	**2000**	0.1930	0.2973	(1.4676)	0.1043	0.1171
2001	0.1914	0.2745	(1.7864)	0.0831	0.0943	**2001**	0.1494	0.2300	(1.4558)	0.0806	0.0910
2002	0.1499	0.2113	(1.7487)	0.0614	0.0725	**2002**	0.1848	0.2843	(1.4636)	0.0995	0.1121
2003	0.1394	0.1961	(1.7066)	0.0567	0.0681	**2003**	0.2285	0.3496	(1.5004)	0.1211	0.1358
2004	0.1493	0.2113	(1.6704)	0.0620	0.0745	**2004**	0.2452	0.3718	(1.5298)	0.1267	0.1425
2005	0.1436	0.2034	(1.6185)	0.0598	0.0728	**2005**	0.2671	0.4038	(1.5803)	0.1367	0.1520
2006	0.1827	0.2637	(1.6363)	0.0810	0.0951	**2006**	0.2669	0.4013	(1.6103)	0.1344	0.1493
2007	0.2008	0.2946	(1.6611)	0.0938	0.1065	**2007**	0.3001	0.4501	(1.6316)	0.1500	0.1661
2008	0.1660	0.2403	(1.6670)	0.0742	0.0860	**2008**	0.3236	0.4846	(1.6468)	0.1610	0.1779
2009	0.0089	0.0122	(1.5877)	0.0033	0.0043	**2009**	0.2761	0.4026	(1.7778)	0.1265	0.1402
2010	0.0483	0.0675	(1.5817)	0.0192	0.0242	**2010**	0.2800	0.4096	(1.7798)	0.1296	0.1428
Asian	a	b	c	d	i=I/Y		a	b	c	d	i=I/Y
10. Japan						**4. France**					
1990	0.5213	0.6849	(2.0309)	0.1636	0.2049	**1990**	0.1312	0.2197	(1.2056)	0.0886	0.0982
1991	0.5036	0.6585	(2.0631)	0.1549	0.1944	**1991**	0.1139	0.1887	(1.2280)	0.0748	0.0833
1992	0.4259	0.5533	(2.2579)	0.1274	0.1550	**1992**	0.0896	0.1471	(1.2365)	0.0575	0.0646
1993	0.3822	0.4968	(2.4890)	0.1146	0.1326	**1993**	0.0487	0.0788	(1.2244)	0.0301	0.0346
1994	0.3634	0.4713	(2.6277)	0.1079	0.1222	**1994**	0.0606	0.0990	(1.2265)	0.0384	0.0435
1995	0.3675	0.4760	(2.6882)	0.1086	0.1218	**1995**	0.0539	0.0881	(1.1802)	0.0342	0.0395
1996	0.3674	0.4735	(2.7971)	0.1061	0.1180	**1996**	0.0313	0.0512	(1.1574)	0.0199	0.0232
1997	0.3658	0.4687	(2.8115)	0.1029	0.1157	**1997**	0.0268	0.0446	(1.1613)	0.0178	0.0202
1998	0.2445	0.3105	(3.0519)	0.0660	0.0727	**1998**	0.0480	0.0809	(1.1589)	0.0329	0.0369
1999	0.1819	0.2290	(3.1343)	0.0471	0.0523	**1999**	0.0587	0.0975	(1.2271)	0.0388	0.0431
2000	0.2349	0.2960	(3.1537)	0.0612	0.0675	**2000**	0.0641	0.1063	(1.2104)	0.0423	0.0473
2001	0.1683	0.2103	(3.2040)	0.0421	0.0470	**2001**	0.1125	0.1890	(1.2112)	0.0765	0.0843
2002	0.0733	0.0907	(3.2312)	0.0175	0.0199	**2002**	0.0984	0.1631	(1.2459)	0.0647	0.0715
2003	0.0429	0.0530	(3.2435)	0.0101	0.0116	**2003**	0.0961	0.1580	(1.2642)	0.0619	0.0686
2004	0.0687	0.0854	(3.2320)	0.0167	0.0189	**2004**	0.0792	0.1283	(1.2678)	0.0491	0.0554
2005	0.0800	0.0996	(3.2313)	0.0196	0.0220	**2005**	0.0954	0.1540	(1.2752)	0.0585	0.0662
2006	0.0662	0.0824	(3.2155)	0.0163	0.0183	**2006**	0.1068	0.1733	(1.2923)	0.0665	0.0742
2007	0.0575	0.0720	(3.1856)	0.0145	0.0162	**2007**	0.1355	0.2198	(1.3163)	0.0843	0.0932
2008	0.1021	0.1273	(3.2155)	0.0252	0.0283	**2008**	0.1364	0.2178	(1.3634)	0.0814	0.0903
2009	0.1290	0.1598	(3.3142)	0.0308	0.0347	**2009**	0.0944	0.1462	(1.4098)	0.0517	0.0589
2010	0.1751	0.2180	(3.3338)	0.0429	0.0475	**2010**	0.1049	0.1610	(1.4286)	0.0561	0.0642
	a	b	c	d	i=I/Y		a	b	c	d	i=I/Y
5. Germany						**6. United Kigdom**					
1990	0.1797	0.2751	(1.5303)	0.0954	0.1059	**1990**	0.1449	0.2138	(1.5941)	0.0689	0.0791
1991	0.1472	0.2332	(1.3859)	0.0859	0.0955	**1991**	0.0838	0.1233	(1.5263)	0.0395	0.0465
1992	0.1285	0.2045	(1.3562)	0.0760	0.0849	**1992**	0.0559	0.0823	(1.4639)	0.0264	0.0317
1993	0.0949	0.1495	(1.3607)	0.0546	0.0617	**1993**	0.0512	0.0761	(1.4083)	0.0249	0.0301
1994	0.1189	0.1883	(1.3824)	0.0694	0.0773	**1994**	0.0493	0.0749	(1.3919)	0.0255	0.0301
1995	0.1154	0.1846	(1.3322)	0.0692	0.0774	**1995**	0.0925	0.1433	(1.3755)	0.0508	0.0584
1996	0.0942	0.1487	(1.3568)	0.0546	0.0615	**1996**	0.0912	0.1428	(1.3442)	0.0516	0.0592
1997	0.0998	0.1567	(1.3914)	0.0569	0.0639	**1997**	0.0993	0.1588	(1.3207)	0.0596	0.0669
1998	0.1174	0.1833	(1.4308)	0.0659	0.0735	**1998**	0.1125	0.1815	(1.3112)	0.0691	0.0770
1999	0.1155	0.1767	(1.4844)	0.0612	0.0690	**1999**	0.1135	0.1806	(1.2954)	0.0671	0.0767
2000	0.1185	0.1799	(1.5051)	0.0614	0.0695	**2000**	0.1032	0.1638	(1.2775)	0.0606	0.0700
2001	0.0910	0.1386	(1.5049)	0.0475	0.0536	**2001**	0.0957	0.1521	(1.2663)	0.0564	0.0653
2002	0.0620	0.0947	(1.5209)	0.0327	0.0365	**2002**	0.0867	0.1389	(1.2473)	0.0522	0.0602
2003	0.0692	0.1054	(1.5331)	0.0362	0.0404	**2003**	0.0854	0.1378	(1.2303)	0.0525	0.0603
2004	0.0543	0.0838	(1.5186)	0.0295	0.0325	**2004**	0.0865	0.1399	(1.2168)	0.0534	0.0616
2005	0.0317	0.0487	(1.5273)	0.0170	0.0188	**2005**	0.0817	0.1313	(1.2022)	0.0496	0.0581
2006	0.0309	0.0480	(1.4927)	0.0171	0.0188	**2006**	0.0848	0.1356	(1.1902)	0.0508	0.0602
2007	0.0332	0.0519	(1.4570)	0.0187	0.0206	**2007**	0.0768	0.1236	(1.1853)	0.0468	0.0551
2008	0.0510	0.0799	(1.4428)	0.0289	0.0320	**2008**	0.0529	0.0850	(1.1651)	0.0321	0.0382
2009	0.0371	0.0573	(1.4991)	0.0203	0.0224	**2009**	0.0396	0.0624	(1.1834)	0.0229	0.0276
2010	0.0541	0.0844	(1.4731)	0.0303	0.0333	**2010**	0.0479	0.0760	(1.1640)	0.0281	0.0340

Table H6 Hyperbola elements, a, b, c, d, and $i = I/Y$ at $y = (cx + d)/ax$ formed for the rate of return, $r^*(i)$: China, India, Brazil, Mexico, Russia, South Africa, 1990-2010

Asian	a	b	c	d	i=I/Y
7. China					
1990	0.6908	0.9204	(1.2688)	0.2296	0.3536
1991	0.7225	0.9518	(1.3180)	0.2293	0.3546
1992	0.7652	1.0064	(1.3273)	0.2412	0.3729
1993	0.8567	1.1215	(1.2073)	0.2649	0.4335
1994	0.7698	1.0155	(1.1176)	0.2457	0.4114
1995	0.5148	0.7487	(0.9623)	0.2339	0.3537
1996	0.5561	0.7899	(1.0366)	0.2339	0.3542
1997	0.5819	0.7977	(1.1140)	0.2158	0.3357
1998	0.6503	0.8650	(1.2659)	0.2147	0.3321
1999	0.7476	0.9724	(1.4346)	0.2248	0.3423
2000	0.8114	1.0409	(1.5376)	0.2295	0.3480
2001	0.8889	1.1224	(1.6092)	0.2335	0.3591
2002	0.9731	1.2074	(1.6492)	0.2343	0.3718
2003	1.0942	1.3348	(1.6214)	0.2406	0.4029
2004	1.1632	1.4034	(1.5401)	0.2402	0.4259
2005	1.1432	1.3672	(1.5012)	0.2240	0.4130
2006	1.1306	1.3429	(1.4551)	0.2123	0.4061
2007	1.4110	1.6614	(1.3950)	0.2504	0.5032
2008	1.4728	1.7230	(1.4505)	0.2502	0.5041
2009	1.5953	1.8426	(1.4576)	0.2473	0.5202
2010	1.6939	1.9381	(1.4499)	0.2442	0.5341

Asian	a	b	c	d	i=I/Y
8. India					
1990	0.1674	0.2987	(1.0496)	0.1313	0.1447
1991	0.1501	0.2698	(1.0327)	0.1196	0.1319
1992	0.1809	0.3225	(1.0374)	0.1416	0.1572
1993	0.1760	0.3136	(1.0285)	0.1376	0.1534
1994	0.2113	0.3706	(0.9950)	0.1592	0.1839
1995	0.1118	0.1987	(1.0182)	0.0869	0.0977
1996	0.1008	0.1844	(0.9517)	0.0836	0.0941
1997	0.1091	0.2006	(0.9559)	0.0915	0.1022
1998	0.0881	0.1640	(0.8911)	0.0759	0.0866
1999	0.1975	0.3679	(0.8641)	0.1705	0.1974
2000	0.2162	0.3813	(0.9697)	0.1651	0.1918
2001	0.2324	0.3952	(1.0570)	0.1628	0.1892
2002	0.2786	0.4499	(1.1203)	0.1712	0.2064
2003	0.3307	0.5124	(1.1111)	0.1816	0.2325
2004	0.3899	0.5875	(1.1786)	0.1976	0.2557
2005	0.3191	0.4763	(1.3493)	0.1572	0.1928
2006	0.3509	0.5242	(1.3173)	0.1733	0.2149
2007	0.3896	0.5795	(1.3112)	0.1899	0.2376
2008	0.4046	0.5997	(1.3430)	0.1951	0.2424
2009	0.3794	0.5641	(1.3500)	0.1846	0.2278
2010	0.3464	0.5205	(1.2887)	0.1741	0.2163

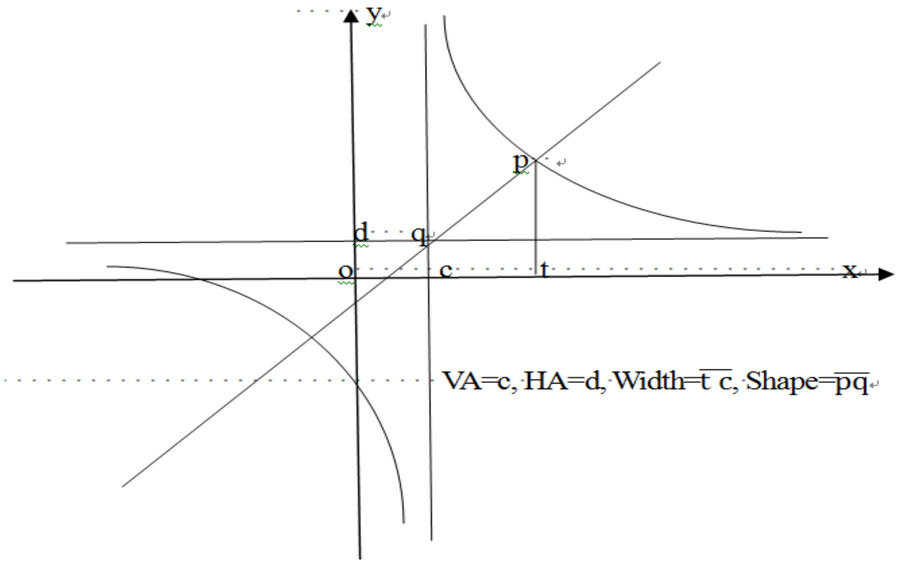
W. Hemis|	a	b	c	d	i=I/Y
3. Brazil					
1990	0.1019	0.2585	(0.3917)	0.1566	0.2019
1991	0.1366	0.2905	(0.1912)	0.1538	0.3315
1992	0.2319	0.3768	(0.3173)	0.1449	0.3254
1993	0.3238	0.4715	(0.4081)	0.1477	0.3424
1994	0.2116	0.3801	(0.4052)	0.1686	0.2966
1995	0.2358	0.4106	(0.9809)	0.1748	0.2050
1996	0.2374	0.4125	(1.0018)	0.1751	0.2037
1997	0.2625	0.4427	(1.0900)	0.1802	0.2083
1998	0.2652	0.4306	(1.2259)	0.1655	0.1892
1999	0.2981	0.4739	(1.3286)	0.1758	0.1986
2000	0.3139	0.4918	(1.3650)	0.1780	0.2023
2001	0.2994	0.4671	(1.4387)	0.1677	0.1868
2002	0.2653	0.4145	(1.4051)	0.1492	0.1679
2003	0.2462	0.3872	(1.3479)	0.1409	0.1605
2004	0.2670	0.4144	(1.2631)	0.1473	0.1765
2005	0.2558	0.3983	(1.3095)	0.1425	0.1668
2006	0.2670	0.4131	(1.3244)	0.1461	0.1716
2007	0.2995	0.4592	(1.3019)	0.1597	0.1917
2008	0.3542	0.5337	(1.2775)	0.1795	0.2231
2009	0.2995	0.4555	(1.4850)	0.1560	0.1774
2010	0.3389	0.5125	(1.4234)	0.1736	0.2033

Pacific	a	b	c	d	i=I/Y
5. Mexico					
1990	0.0679	0.2340	(0.2845)	0.1661	0.1991
1991	0.0927	0.2603	(0.3892)	0.1676	0.1998
1992	0.1175	0.2981	(0.5351)	0.1806	0.1991
1993	0.1233	0.2819	(0.6392)	0.1586	0.1749
1994	0.1477	0.3135	(0.7315)	0.1658	0.1830
1995	0.0877	0.2357	(0.4709)	0.1479	0.1660
1996	0.1174	0.2877	(0.4945)	0.1704	0.2011
1997	0.1571	0.3443	(0.5638)	0.1872	0.2284
1998	0.1650	0.3516	(0.6871)	0.1866	0.2117
1999	0.1708	0.3477	(0.7478)	0.1769	0.2010
2000	0.1863	0.3656	(0.8032)	0.1793	0.2039
2001	0.1770	0.3321	(0.9340)	0.1550	0.1714
2002	0.1890	0.3409	(1.0135)	0.1519	0.1683
2003	0.2151	0.3831	(0.9840)	0.1681	0.1917
2004	0.2356	0.3980	(0.9262)	0.1624	0.2032
2005	0.2719	0.4486	(1.1334)	0.1767	0.2059
2006	0.3175	0.5035	(1.1585)	0.1861	0.2258
2007	0.3479	0.5361	(1.2429)	0.1883	0.2296
2008	0.3858	0.5781	(1.3370)	0.1923	0.2356
2009	0.3975	0.5773	(1.5706)	0.1797	0.2133
2010	0.4482	0.6363	(1.5471)	0.1881	0.2334

	a	b	c	d	i=I/Y
7. Russia					
1995	0.1303	0.2598	(0.9481)	0.1295	0.1334
1996	0.1024	0.2242	(0.7924)	0.1218	0.1255
1997	0.0825	0.1830	(0.7784)	0.1006	0.1032
1998	0.0200	0.0458	(0.7319)	0.0258	0.0266
1999	0.0089	0.0288	(0.4029)	0.0200	0.0210
2000	0.0269	0.0857	(0.2719)	0.0588	0.0763
2001	0.0446	0.1358	(0.3249)	0.0912	0.1119
2002	0.0442	0.1301	(0.3612)	0.0859	0.1025
2003	0.0608	0.1662	(0.3847)	0.1054	0.1290
2004	0.0677	0.1765	(0.4021)	0.1088	0.1353
2005	0.0631	0.1605	(0.4153)	0.0975	0.1217
2006	0.0759	0.1849	(0.4421)	0.1090	0.1368
2007	0.0991	0.2297	(0.5027)	0.1305	0.1604
2008	0.1098	0.2449	(0.5247)	0.1351	0.1681
2009	0.0743	0.1563	(0.6797)	0.0820	0.0947
2010	0.1107	0.2123	(0.6049)	0.1017	0.1364

Africa	a	b	c	d	i=I/Y
18. South Africa					
1990	0.0302	0.0967	(0.3735)	0.0664	0.0733
1991	0.0328	0.1017	(0.3909)	0.0689	0.0760
1992	0.0354	0.1051	(0.4164)	0.0697	0.0769
1993	0.0486	0.1370	(0.4519)	0.0884	0.0975
1994	0.0631	0.1664	(0.5013)	0.1033	0.1140
1995	0.0916	0.2222	(0.5696)	0.1306	0.1449
1996	0.0563	0.1735	(0.3940)	0.1171	0.1294
1997	0.0630	0.1741	(0.4671)	0.1111	0.1224
1998	0.0774	0.1935	(0.5482)	0.1161	0.1280
1999	0.0940	0.2181	(0.6059)	0.1242	0.1388
2000	0.1033	0.2279	(0.6565)	0.1246	0.1400
2001	0.1111	0.2338	(0.7153)	0.1227	0.1381
2002	0.1195	0.2442	(0.7428)	0.1246	0.1416
2003	0.1356	0.2662	(0.8307)	0.1306	0.1460
2004	0.1654	0.3131	(0.8984)	0.1477	0.1649
2005	0.1650	0.3068	(0.9454)	0.1418	0.1573
2006	0.1905	0.3462	(0.9977)	0.1557	0.1724
2007	0.2418	0.4260	(1.0504)	0.1842	0.2059
2008	0.2782	0.4725	(1.1122)	0.1943	0.2205
2009	0.1986	0.3292	(1.2531)	0.1306	0.1439
2010	0.2106	0.3477	(1.2524)	0.1371	0.1518

When *f/a* is plus, the diagonal is upward to the right



When *F/A* is minus, the diagonal is downward to the right

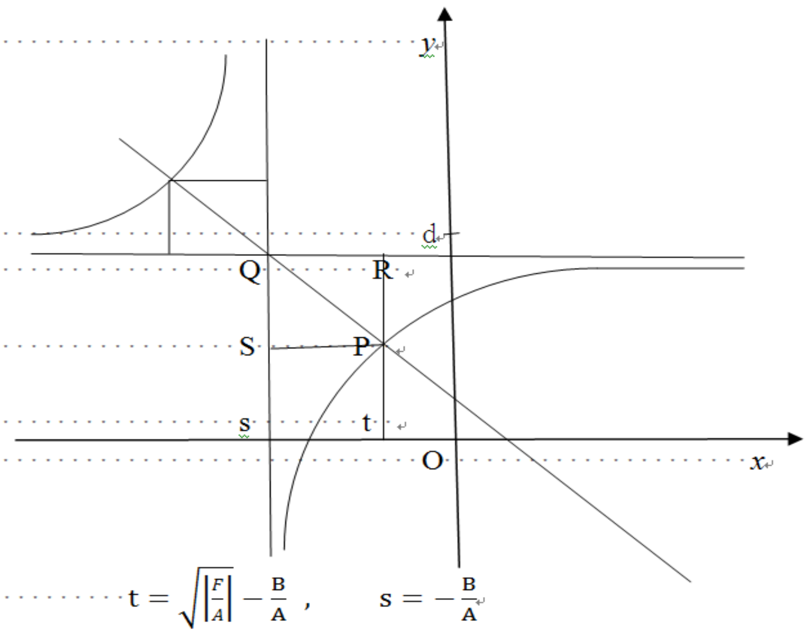
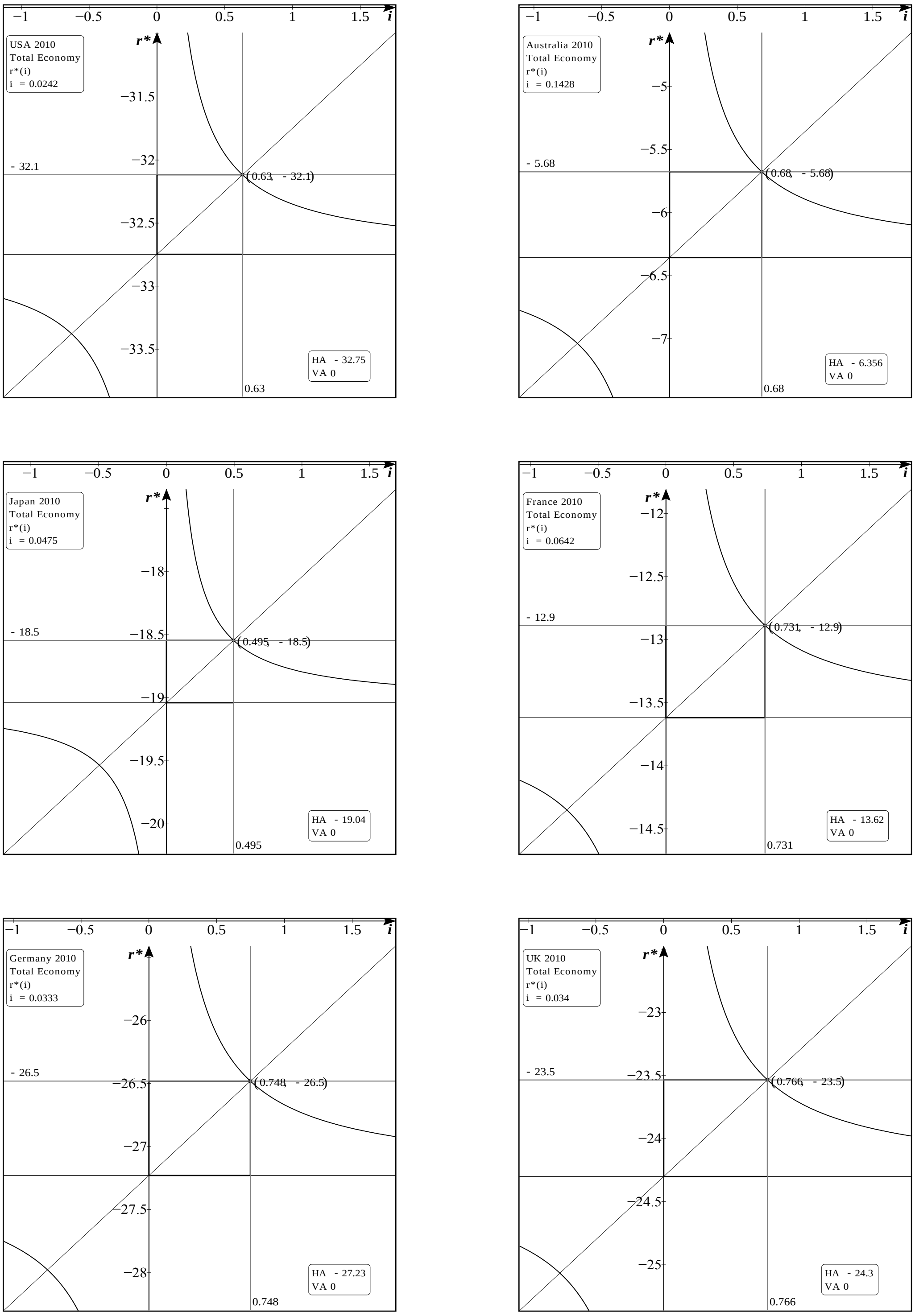
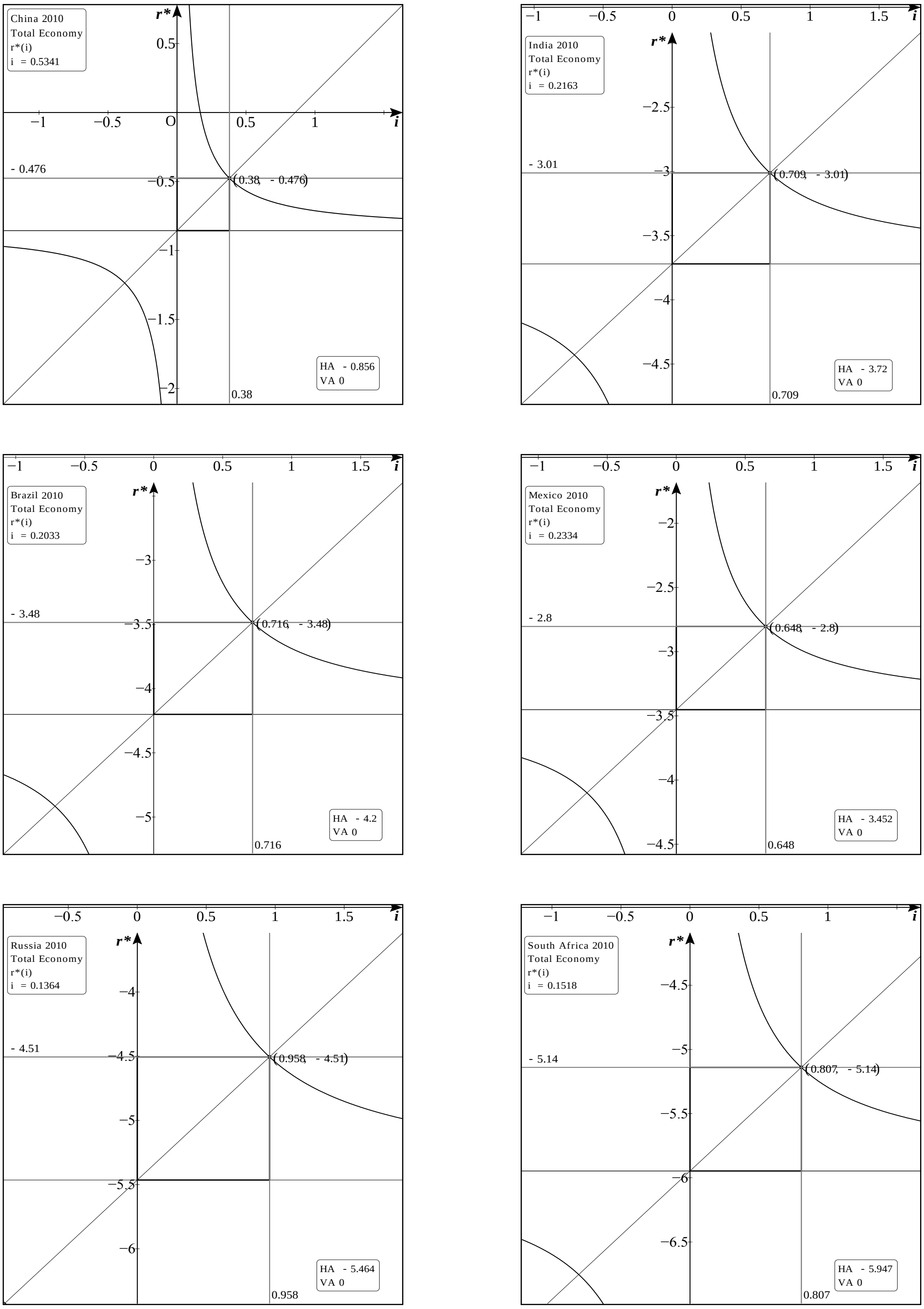


Figure H1 Relationship between the rectangular hyperbola and the rectangular equilateral triangle: *f/a*>0 versus *F/A*<0



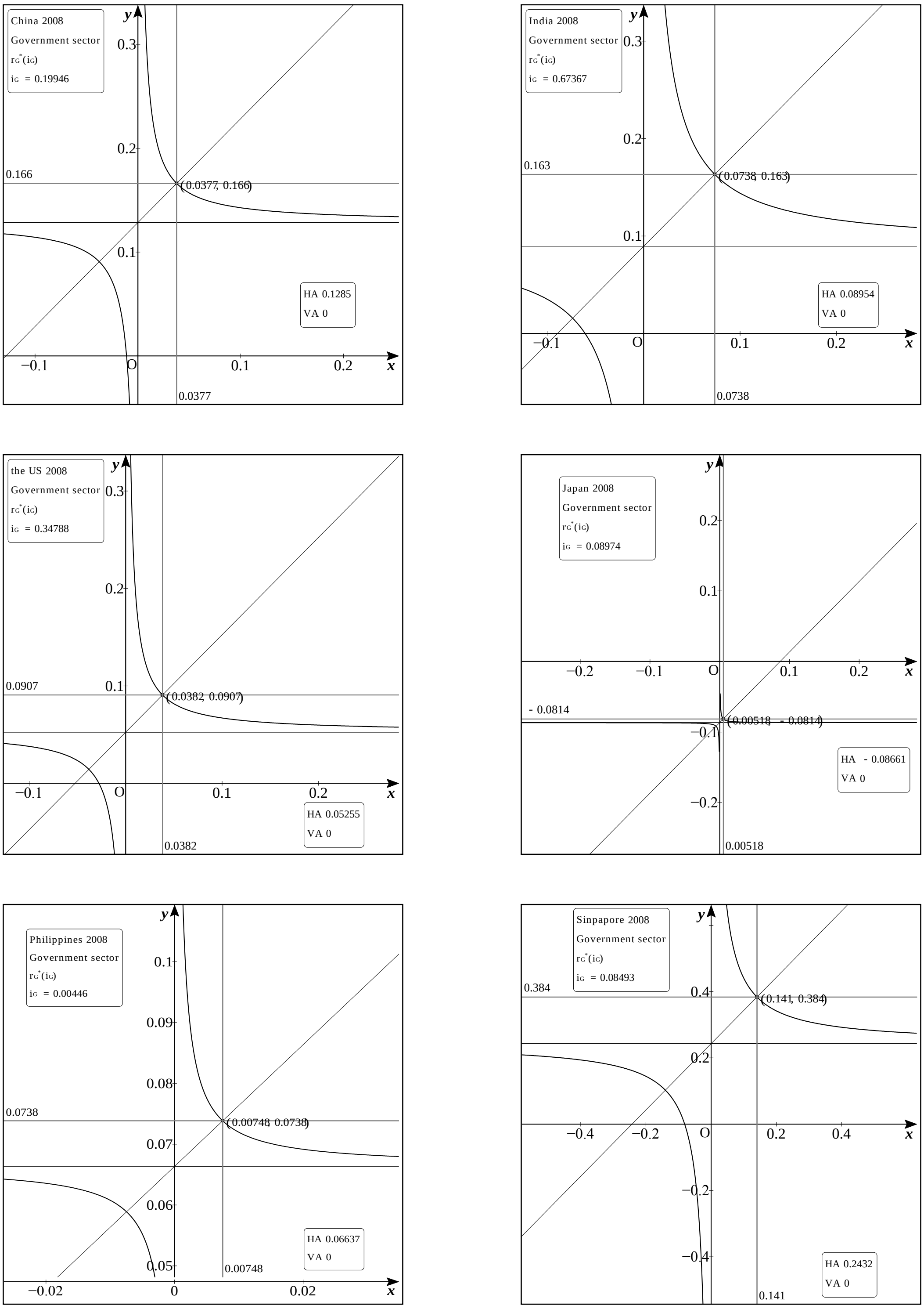
Data source: KEWT 6.12-1, -2, -3, and -4, by country and sector, 1990-2010, whose original data are from *IFSY*, IMF.

Figure H2 Hyperbola of the rate of return to net investment to output, $r^*(i)$: the US, Australia, Japan, France, Germany, the UK 2010



Data source: KEWT 6.12-1, -2, -3, and -4, by country and sector, 1990-2010, whose original data are from *International Financial Statistics Yearbook*, IMF. I am much obliged to Tomoda, K., for his software help.

Figure H3 Hyperbola of the rate of return to net investment to output, $r^*(i)$: China, India, Brazil, Mexico, Russia, South Africa, 2010



Data source: KEWT 4.10, by country and sector, 1990-2008, whose original data are from *International Financial Statistics Yearbook*, IMF.

Figure H4 Hyperbola of the rate of return to net investment to output at the G sector, $r_G^*(i_G)$: China, India, the US, Japan, the Philippines, Singapore, 2008

Chapter 5

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