

Relative Price Level of Consumer Goods to Producer Goods, (rho/r) , and (r/w) : Towards Win-Win Relationship between the Rate of Return and the Wage Rate

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1. Introduction: related to scientific foundation

This paper is composed of three with empirical results in economic analysis under the market principles and using endogenous KEWT series database: i) Implication of scientific foundation in purely endogenous system, ii) The macro and micro BEP structure in new fact-findings, and iii) Key explanation of the rate of return and the wage rate through the relation between (rho/r) and (r/w) in two dimensions. iii) is main subject of this paper, where (rho/r) is the relative discount rate of consumer goods/services to producer goods/services. The author presents the results of this relation by country over years.

Is there any difference in scientific foundation between social and economic science and physics, elemental chemistry, and biology? No. Then, why does purely endogenous database satisfy scientific foundation so easily? The author's answer is this: In endogenous database, quality = quantity = money (i.e. M2) = the same = 1.0000 under the market principle (here, single as a whole system in the macro level), while in the literature, quality = price and quantity = quantity vertically by goods/services under the market principles (here, plural in its terminology).

The market principle or principles are the same yet, differently expressed by nature. We never blame the market principles since prices are trustworthy just like next to the Nature, absolute existence, or God. We are happy as long as we treat money or M2. This is because the neutrality of money has prevailed in this world for thousands of years since we have used money in human history. The author has proved the money-neutral repeatedly, as shown in *Int Adv Econ Res* (2010) 16: 292–296. The money-neutral will remain unchanged for the future over years, supported by the author's Axiom of a constant capital-output ratio, as clarified in six new fact-findings using geometric instead of mathematics.

The level of its strictness may be different over years, depending on the levels of politics-neutral and spirituality-neutral a little bit by country and its leaders or decision-makers. A

unique essence of money or the market principle(s) is 100% reproducibility or duplicability. Reproducibility or duplicability is another word of purely endogenous database.

In the case of physics, elemental chemistry, and biology, reproducibility or duplicability is not always easy. This comes from each character of physics, element chemistry, and biology. In this respect, social science holding without numerical expressions is similar although social science is deeply involved in human decision-making.

Preservation of data sometimes might be difficult in reproducibility/duplicability. As a result, it might be more difficult than physics for biology to guarantee reproducibility/duplicability. Nevertheless, reproducibility/duplicability will be a necessary condition of scientific foundation. In this respect, KEWT series database is endowed with scientific foundation. It is really fortunate for the author to be involved in life-work of purely endogenous system for the last sixty years or more.

Second, the macro and micro BEP structure in new fact-findings is summarized as follows: The concept of break-even-point (EBP) is originally peculiar to accounting and enterprises. A demerit is that the BEP cannot show the profitability level except for $BEP = 1.0000$. The author created hyperbola equation based on the original equation in Kneoppel, C. E. (1933, 1937) but no one has cited the author's hyperbola equation reduced from the original equation in the literature.

The author here pays attention to academic records of Vatter, W. J. (1947; 141Pp., 1969). This is because Vatter researched unique relation between cash flows and double bookkeeping: If Vatter in eternity had lived longer he might have invented endogenous system earlier than the author's one or, a little differently in accounting.

The tie between Macro and Micro is well connected with a new concept of BEP. This is because value added in Micro is first the first time becomes perfect by the macro structure that adds external values to national disposable net income, $Y = NDI$, where value added (VA) in the micro level correspond with $Y = NDI$ in the macro level. We need external expenses: In the micro level external expenses by enterprise and in the macro level, aggregate external expenses wholly as a System of National Accounts (SNA). We must look at both VA/ NDI and external expenses. This is 'introspect' on Kamiryo, H. (1965, Japanese; in the micro level) and Kamiryo, H. (1974, PhD thesis; in the macro level), where the author was separately absorbed in VA and NDI.

Now, conclusively, what does this mean by the macro and micro BEP structure in new fact-

findings? Recall Drucker, Peter, F. (1939, 1999, and 2002) as genius researcher. He had advocated life-time employment system as prevailed in Japan before the 1990s. The macro and micro BEP structure proves theoretically empirically (scientifically) that the BEP structure matches the life-time employment system, partly due to the efficient = effective causes = results character of purely endogenous. Three endogenous specified parameters are deeply involved in the BEP structure. Also see one of new fact-findings; *Journal Finance and Economics*, (Jan 23, 2014, received), ‘Structural Improvement in Labor Productivity, Individual Life-Time versus Systems.’

Third, the rate of return and the wage rate, through the relation between (rho/r) and (r/w) in two dimensions are broadly explained as main subject of this paper. Purely endogenously with no assumption is expressed by various terminologies: Under perfect competition; $MPL = w$ and $MPK = r$; the relative price level $p =$ the absolute price level $P = 1.0000$; the rate of substitution measured, $\sigma = 1.0000000$; Axiom of a constant capita-output ratio, $\Omega = \Omega^* = \Omega_0$; $r = r^* = r_0$; six neutrals (money-neutral, consumption-neutral, alpha-neutral, deficit-neutral ($\Delta d = 0$ maximizing returns/profits), politics-neutral, and spirituality-neutral); a Utopia economy in reality; the endogenous-equilibrium; R_{MAX} or Π_{MAX} by I_{MIN} ; the speed years for convergence positively measured; full employment with no inflation/deflation.

Most importantly, full employment with no inflation/deflation empirically supported by Samuelson’s (1970) constant capital-output ratio as the first/original appearance.

Look at **Fig. 1** to **Fig. 18** and **Fig. A1** to **Fig. A6**, and carefully inspect and compare each other. Countries are selected among 86 countries, whose original data come from ten real assets and fifteen from financial/market and external assets in *International Financial Statistics Yearbook*, IMF. Each country has its own national taste (preferences, culture, and history), which is independent of technological progress, as evidenced in KEWT series databases. Each country is able to grow, which is zero-sum competition. Take it easy; as long as we stay at the real assets, no zero-sum game is possible. We do blame any opposite side. We enjoy the other side as well as one side. One and the other are instantly balanced. This is called *dynamic balance*, beyond space and time, although actually we stay at two dimensions scientifically. Hyperbola functions unite philosophy, theory, and practice always simultaneously. This is the moderation philosophy, the negative and positive principle reinforcing the market principle perfectly.

Nevertheless, some countries each attain *dynamic balance* soon shortly while others each take several times to recover *dynamic balance*. Why so much difference of time-consuming for recovering *dynamic balance* in the endogenous-equilibrium? For example, it takes several hours

Turkey, and Philippines while Singapore and Malaysia and Indonesia within half an hour only.

Generally, a country must grow steadily starting with net investment. Matured/developed countries each shift consumption steadily. It takes usually half an hour to lead to *dynamic balance* in developed countries. When equilibrium is unstable, the country needs consumption suddenly to conquer some shocks, which delays steady transition from developing to developed stage. Why equilibrium unstable in developing countries? There are three alternatives: i) Public net investment-oriented for infra-structure first and, the private sector runs later. ii) Government is neutral, and private companies grow themselves by their own responsibility (i.e. Adam Smith spirituality). iii) Always government and companies pay attention to each own balance.

Generally, small population countries are robust. Why? People are alert at the change in national debt and deficit. Norway, Sweden, and Finland, each has its own character yet, some shocks are conquered in the long run. The short run is avoided since they are afraid of state bankruptcy or economic collapse and lead government in the long run. One of new fact-findings discusses the level of democracy, where this level is measured numerically and empirically. Japan is agri-culture (i.e., agriculture) historically so that people have been afraid of out of groups, where everything is delayed or do nothing. This is negative side of moderation philosophy while positive side is delicate tongue and fingers so that precise manufacturing is the best in the world.

Naturally, systems created by human are vertical-oriented. This is natural since the market principles (here, plural use) hold vertically by good/services. Natural system, contrarily, is organic and wholly as a system by nature. Then, why is the *EES* organic and close to nature?

Because, the *EES* is accurately measured wholly as a system and under the market principle (here, single use, repeating). The market principle is close to nature next to such sciences as physics and element chemistry. Why is it so? Repeating, money is another word for the market principle. Money-neutral is most close to Axiom of a constant capital-output ratio under the market principle. The macro and micro BEP structure easily expresses the essence of organic system (here, single use). Mechanically, the relation between net investment and the technology coefficient, β^* , is involved in the *EES* or organic system. As a result, the speed years for convergence need to be positive after converting negative to positive, technically using absolute values (in detail, see chapters 7 and 8 in the *EES*).

In short, Organic system reinforces horizontal connecting wholly with vertical systems under the market principles. Warps become cloth by weaving using woofs, as the author has advocated in the two dimensions that correspond whole lovely cloth.

2. New fact-findings, 2013–2014

The author has obeyed the general consensus among publishers that intellectual property must solely use one publisher so that the author has not published the following manuscripts except for submitting one or two to journal publishers as shown below. The author is thankful to the Better Advances Press, Toronto. The Editor wanted not to publish his name but here I think I must publish his name, Yisheng Huang. This is because without his intuitive judgment for perfect reproducibility/duplicability, “*Earth Endogenous System: to Answer the Current Unsolved Economic Problems* (hereafter the *EES*)” had not published on 15 May 2013. No one and editors of publishers cannot take risk for publication to guard his/her organization. This is generally true. The author wonders, even today, why did he believe perfect reproducibility/duplicability? The author is lucky in that the *EES* was published last May. Also the Founder of International Atlantic Economic Society, Atlanta, Late John Virgo in eternity, and his wife, Katherine, who succeeded his position since 2012 have believed perfect reproducibility/duplicability in ideas and practice towards the *EES*, with KEWT (Kamiryo Endogenous World Table) series databases published since 2007, when I attended International Atlantic Economic Conference, Savannah. In October 2014, we have International Atlantic Economic Conference, Savannah. The BEP structure will be discussed in Savannah, as shown below.

1. *IAER*. (IAER-D-13-00101, under review) (2013a). The Real Rate of Profits>Returns Equals Zero, Actually and Endogenously: With Money-Neutral of the Financial/Market Assets to the Real Assets. 20p.
2. *The EJ*, Manchester, presented (under review). (2013b). Royal Roads to Utopia Economy, Wholly under the Endogenous-Equilibrium = the Price-Equilibrium. 21p.
3. *JFE*, (Jan 23, 2014, received). (2014c). Structural Improvement in Labor Productivity, Individual Life-Time versus Systems. 12p.
4. *AEJ* (2013d). (AEJ-D-13-00049R1, after revised). Consumption-Neutral to Growth and Technology: Actual versus Endogenous. 28p.
5. *JFE* (2013e). (Dec 11, 2013, received). Why is An Discrete Cobb-Douglas Production Function A Numerical Core of Social and Economic Science? 33p.
6. *IAES*, Madrid, presented. (2013f). Stop macro-inequality and full-employment in reality: Starting with α -neutral. 19p.

7. *IAES*, Savannah, presented. (2013g). From the Break-Even Point to the Net Sales and Returns Equations: Commonly Macro and Micro. 14p.
8. *CMI* via a Journal (Historical) (2014h). Foundation of social/economic science proved by two-dimension plane hyperbolas (2DPH) and by government and private sector, differently from mathematics and statistics. The first version was directly presented on 1 Sep 2013 but, at the responsibility of the author's misprocessing.
9. *Review of Income and Wealth*. (Jan 10, 2014, received). (2014i). The United-Measure System between Macro and Micro: the Prices-Parabolas, Concave, Convex, versus the Amounts-Hyperbolas. 20p.
10. *Review of Economic Studies* (Feb 13, 2014, presented to Wiley). (2014j). Optimum functions-measure numerated by using the curvature in the two-dimension plane. 14p.
11. *Review of Economic Studies* (Feb 13, 2014, presented to Wiley). (2014k). Qualitative Democracy levels-measure by the curvature, towards moderation = the origin in the plane. 20p.

Further I have written up the following five manuscripts but without presenting each to a journal suitable for acceptance. These five manuscripts supplement the above eleven papers already presented.

- (1) Economics versus Management based on Peter Drucker (1999, 2002).
- (2) Economics versus Statistics based on physics.
- (3) Q & A: How to interpret James Tobin (1980).
- (4) Q & A: How to interpret Gregory, N. Mankiw (2006).
- (5) Q & A: How to interpret Microeconomics of Samuelson and Nordhaus (19e, the last edition, 2010).
- (6) Q & A: How to interpret illustrative topology in Granger, C. W. J. (1969), Amano, Masanori. (1983), and Azem, J. P. (1983).
- (7) Q & A: How to interpret illustrative topology in Agénor, Pierre-Richard. (April 2006, #052) and Paul Madden. (March 2010).

3. Three fundamental fact-findings in the two dimensions

Empirically, three fact-findings by sector are most fundamental among others. These three fact-findings are: i) democracy level, ii) wage rate, and iii) the relative discount rate of consumer goods/services to producer goods/services by sector. These are, of course, explained and discussed in the above papers.

Relative Price Level of Consumer Goods to Producer Goods, (ρ/r), and (r/w)

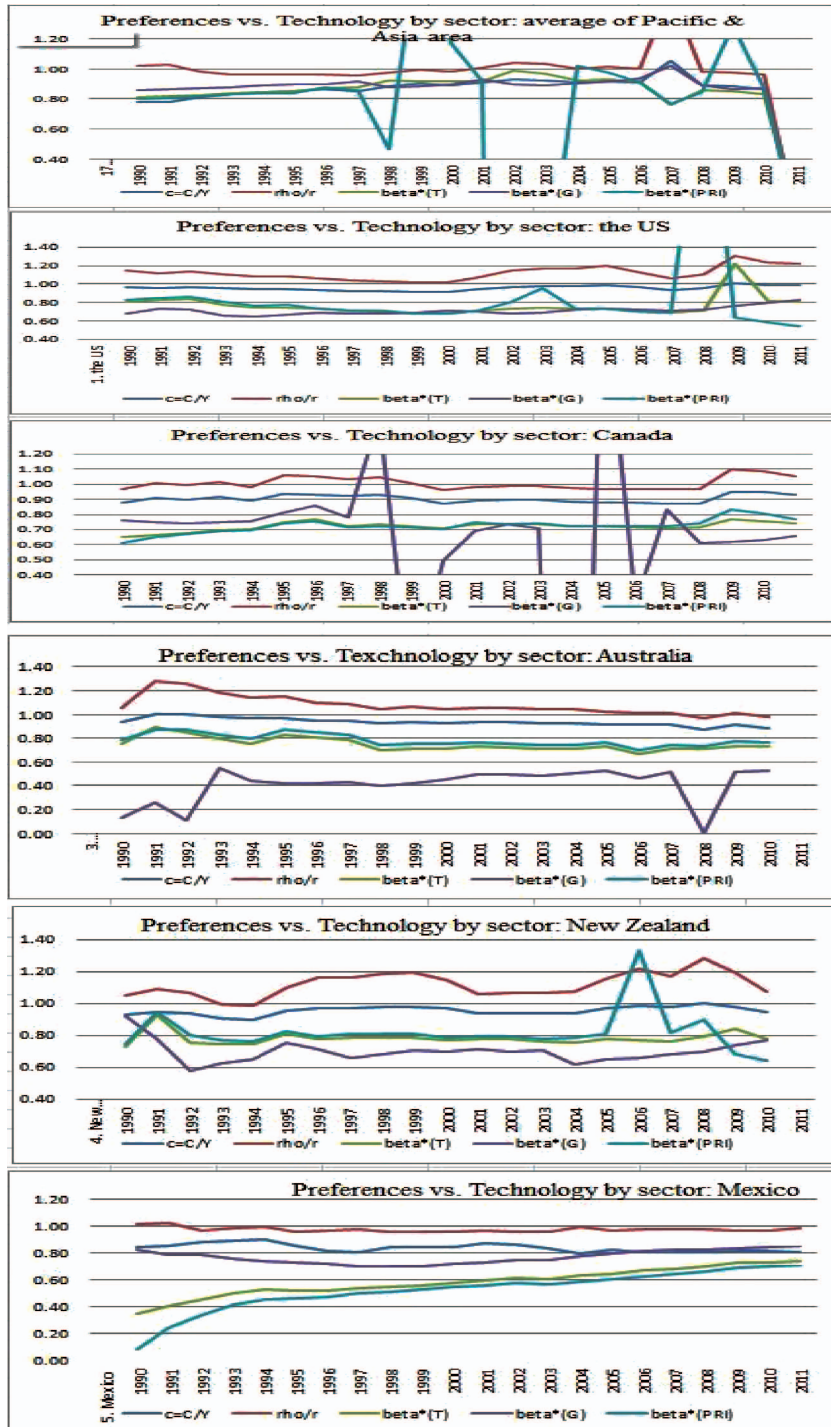


Figure PT1 Preferences vs. technology by country

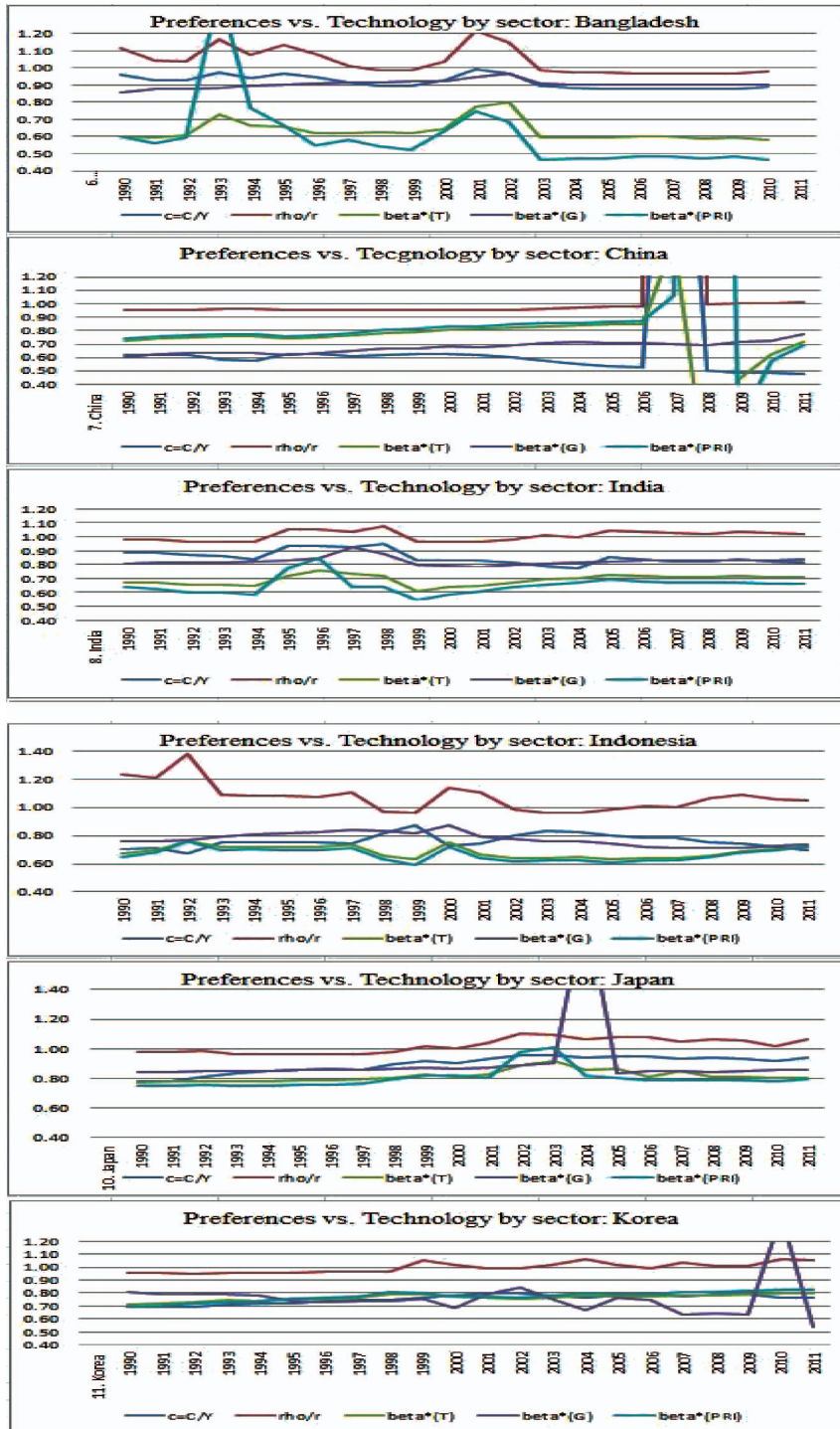


Figure PT2 Preferences vs. technology by country

Relative Price Level of Consumer Goods to Producer Goods, (ρ/r), and (r/w)

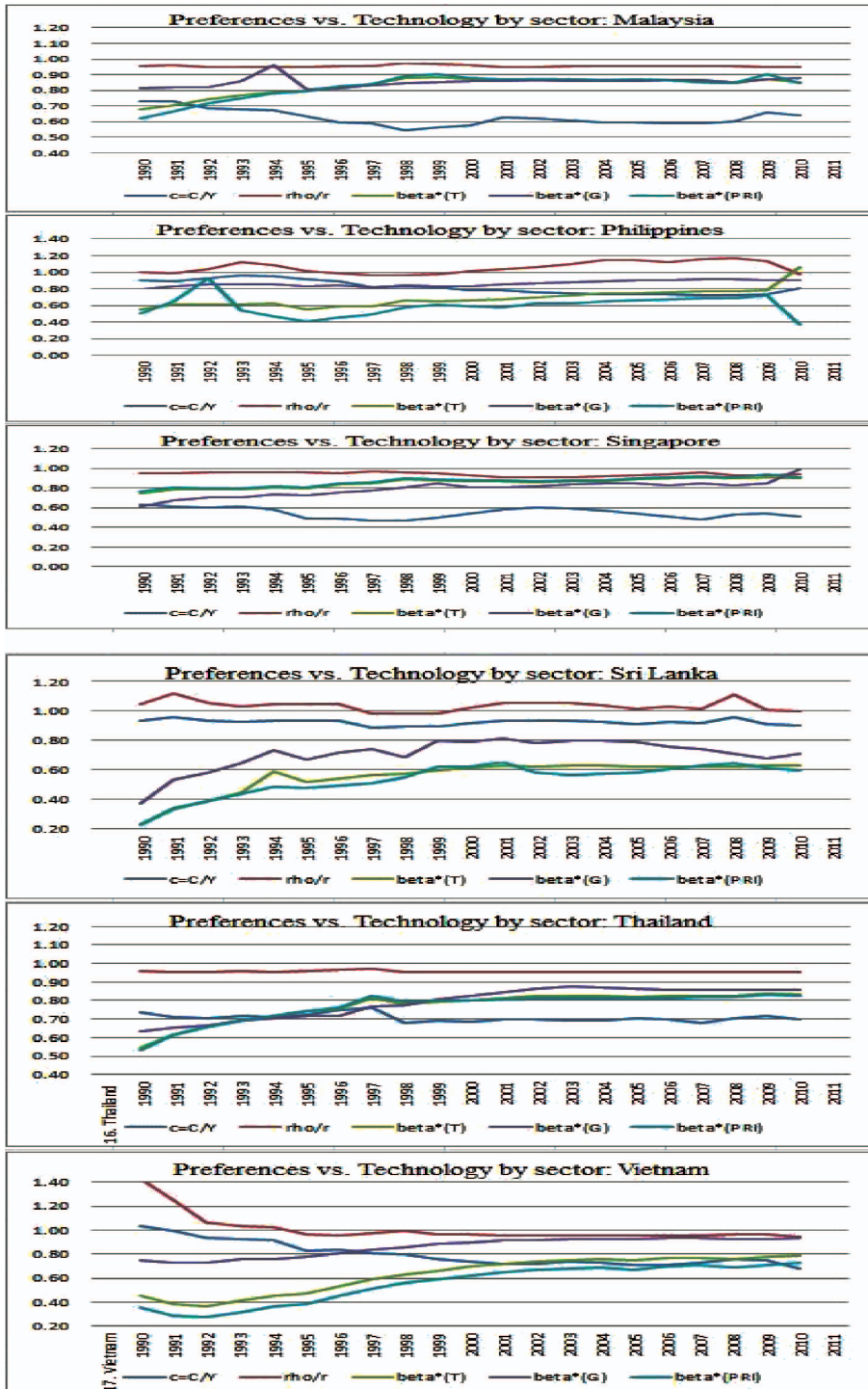


Figure PT3 Preferences vs. technology by country

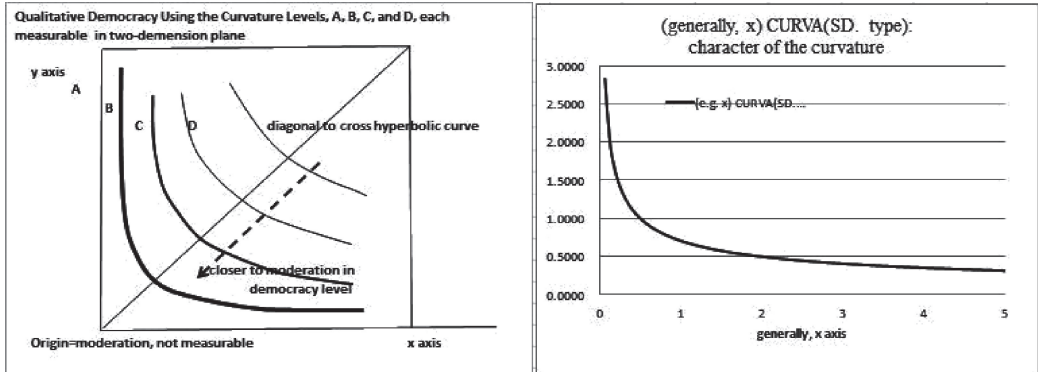


Fig. 1-1 Democracy level accurately measured in the two dimensions

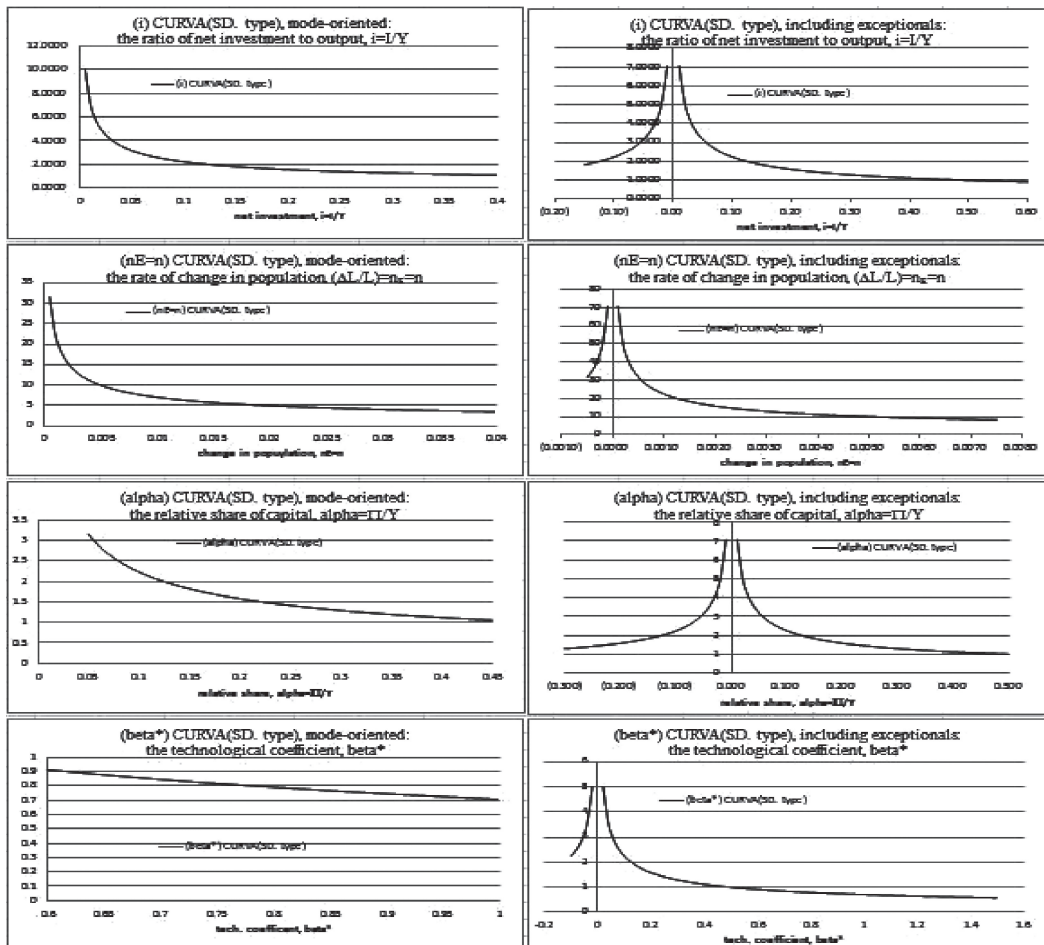


Fig. 1-2 Democracy level accurately measured in the two dimensions

Relative Price Level of Consumer Goods to Producer Goods, (rho/r) , and (r/w)

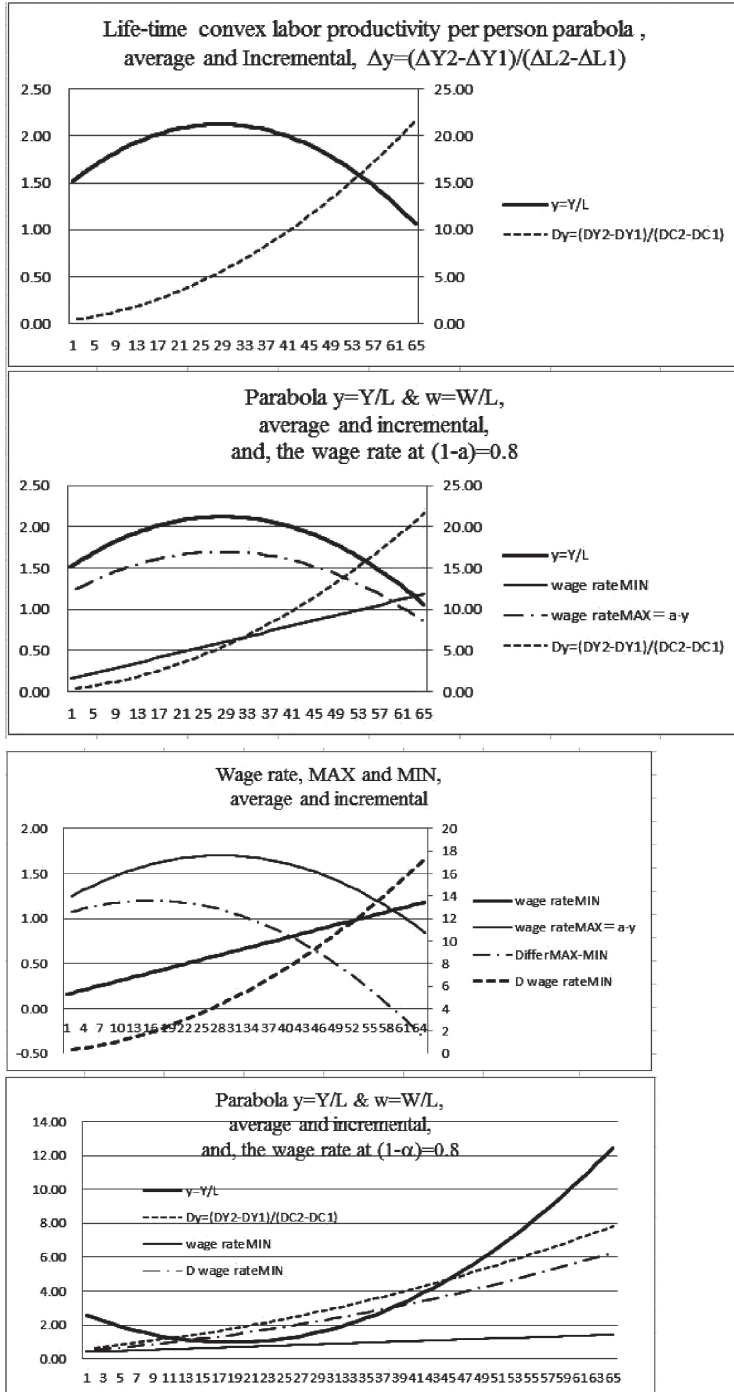


Fig. 2-1 The wage rate; its average and incremental

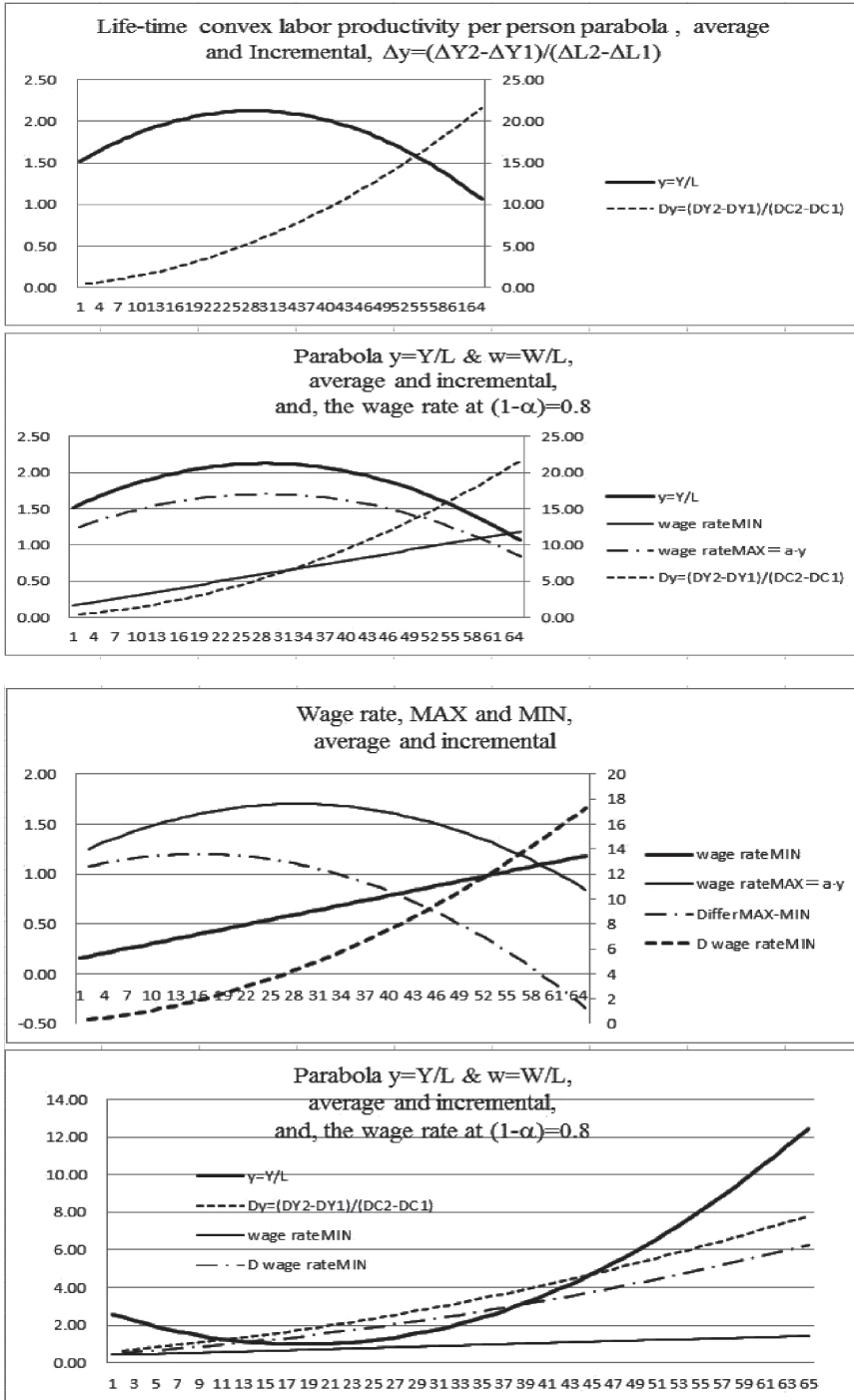


Fig. 2-2 The wage rate; its MAX and MIN based on amounts

Relative Price Level of Consumer Goods to Producer Goods, (rho/r) , and (r/w)

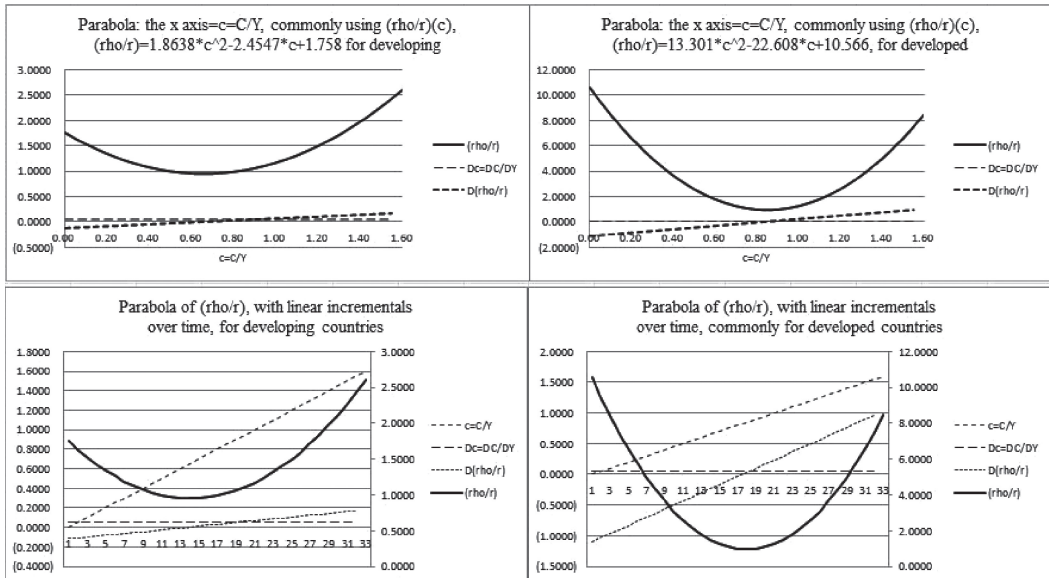


Fig. 3 The relative discount rate of consumer goods/services to producer goods/services as a base

The above figures connect one with others wholly as a system. As a result, macro and micro are integrated, where standard type (SY) of hyperbola is used; $h(x) = (cx + d) / (ax + b)$. In the literature, standard type is usually presented by so called the indifference curve in topology yet, remains illustration, with no measurement. The curvature is most fundamental; $Curvature = 1 / \sqrt{2|f/a|}$. The EES had taken account of stable balance between Width and Shape. Finally, we find curvature is most effective = efficient, although curvature is inverse of Shape. In anyway, we need horizontal power to reinforce vertical market principles.



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Fig. 3 (ρ/r) on the LHS and (r/w) on the RHS: India, Indonesia, Japan, and Korea

Fig. 4 (ρ/r) on the LHS and (r/w) on the RHS: Malaysia, Philippines, and Singapore

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Fig. 11 (ρ/r) on the LHS and (r/w) on the RHS: Sweden, Switzerland, the UK, and Bulgaria

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Fig. A1 (ρ/r) on the LHS and (r/w) on the RHS: Asia-area by country

Fig. A2 (ρ/r) on the LHS and (r/w) on the RHS: North America-area by country

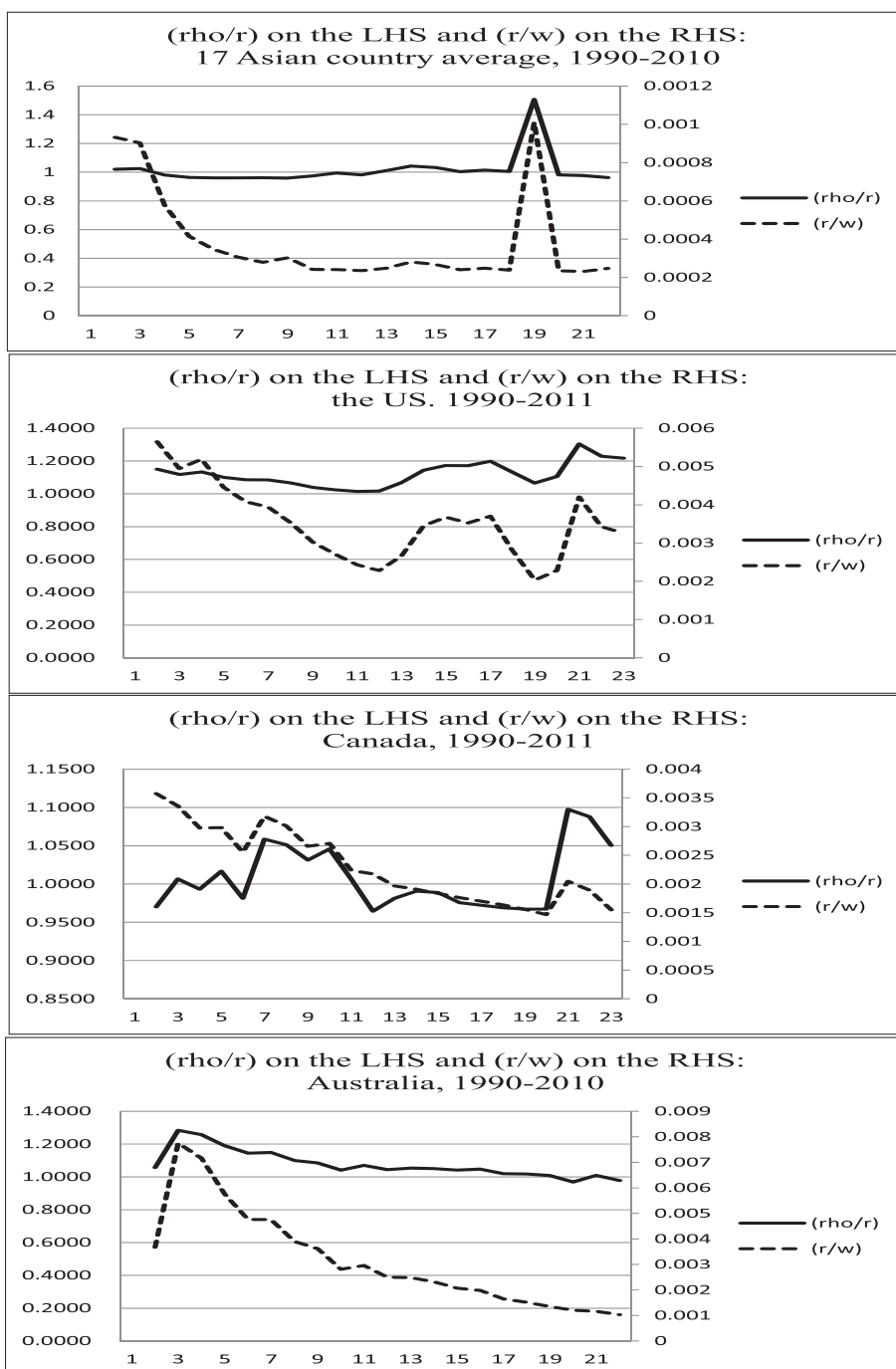
Fig. A3 (ρ/r) on the LHS and (r/w) on the RHS: BRIC- area

Fig. A4 (ρ/r) on the LHS and (r/w) on the RHS: Euro-areas by country

Fig. A5 (ρ/r) on the LHS and (r/w) on the RHS: EU-area excluding Euro

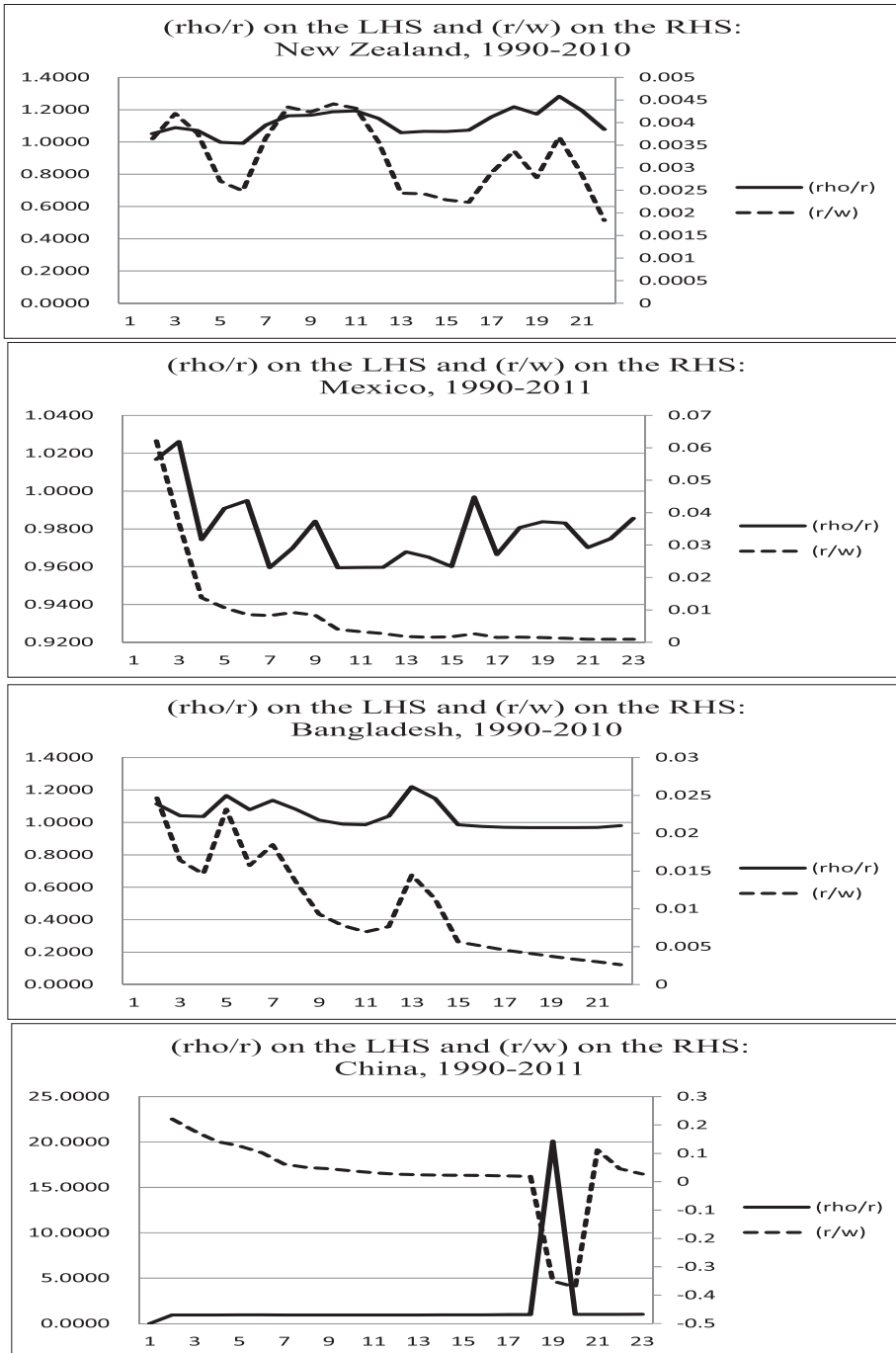
Fig. A6 (ρ/r) on the LHS and (r/w) on the RHS: East Europe-area

Relative Price Level of Consumer Goods to Producer Goods, (rho/r) , and (r/w)



Data source: The KEWT database, 1960/90 to 2010/2011, for 68 countries, whose original statistics data (10 real assets and 15 financial assets), from International Financial Statistics Yearbook, IMF.

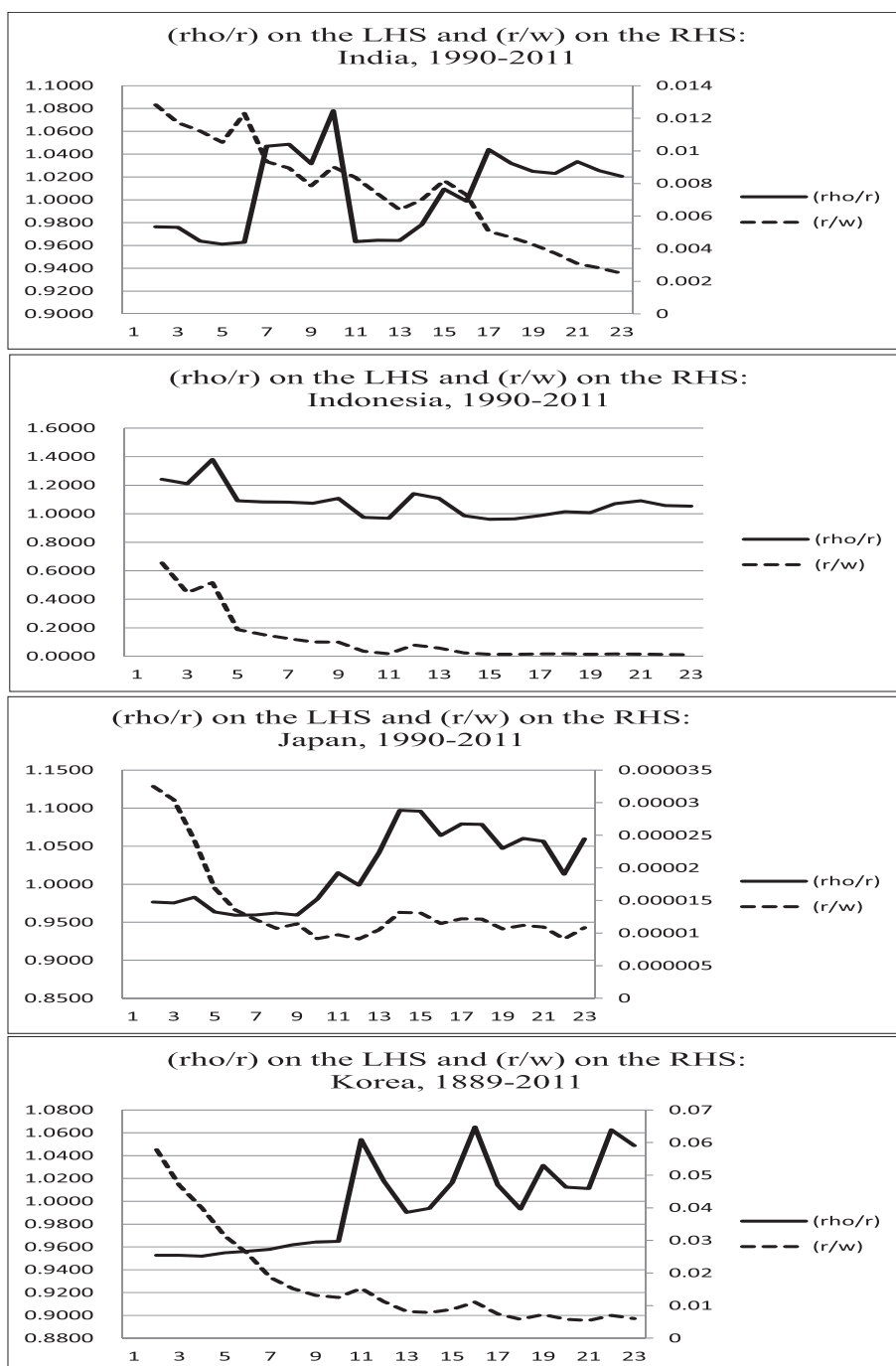
Fig. 1 (rho/r) on the LHS and (r/w) on the RHS: Asia area, the US, Canada, Australia



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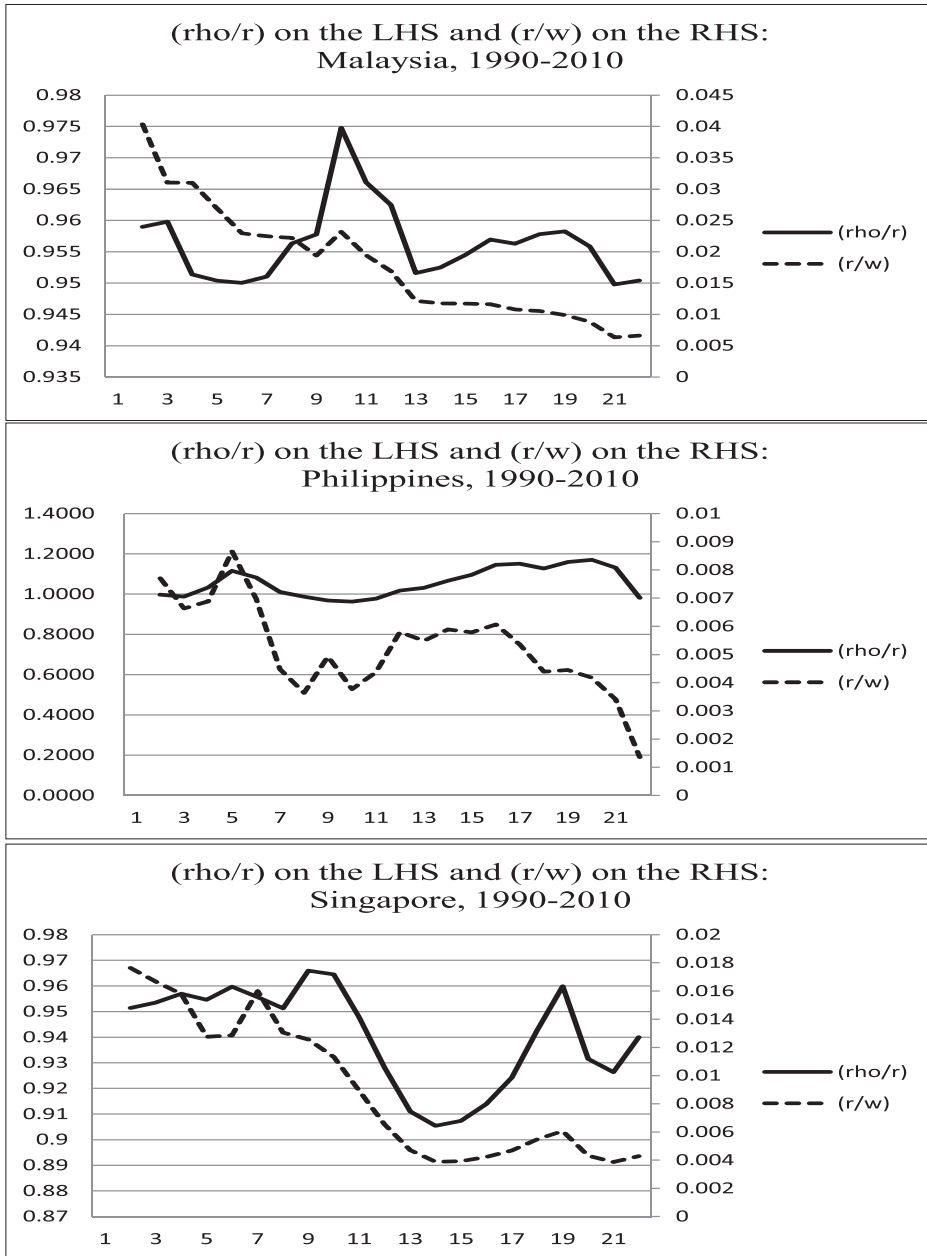
Fig. 2 (ρ/r) on the LHS and (r/w) on the RHS: NZ, Mexico, Bangladesh, and China

Relative Price Level of Consumer Goods to Producer Goods, (rho/r) , and (r/w)



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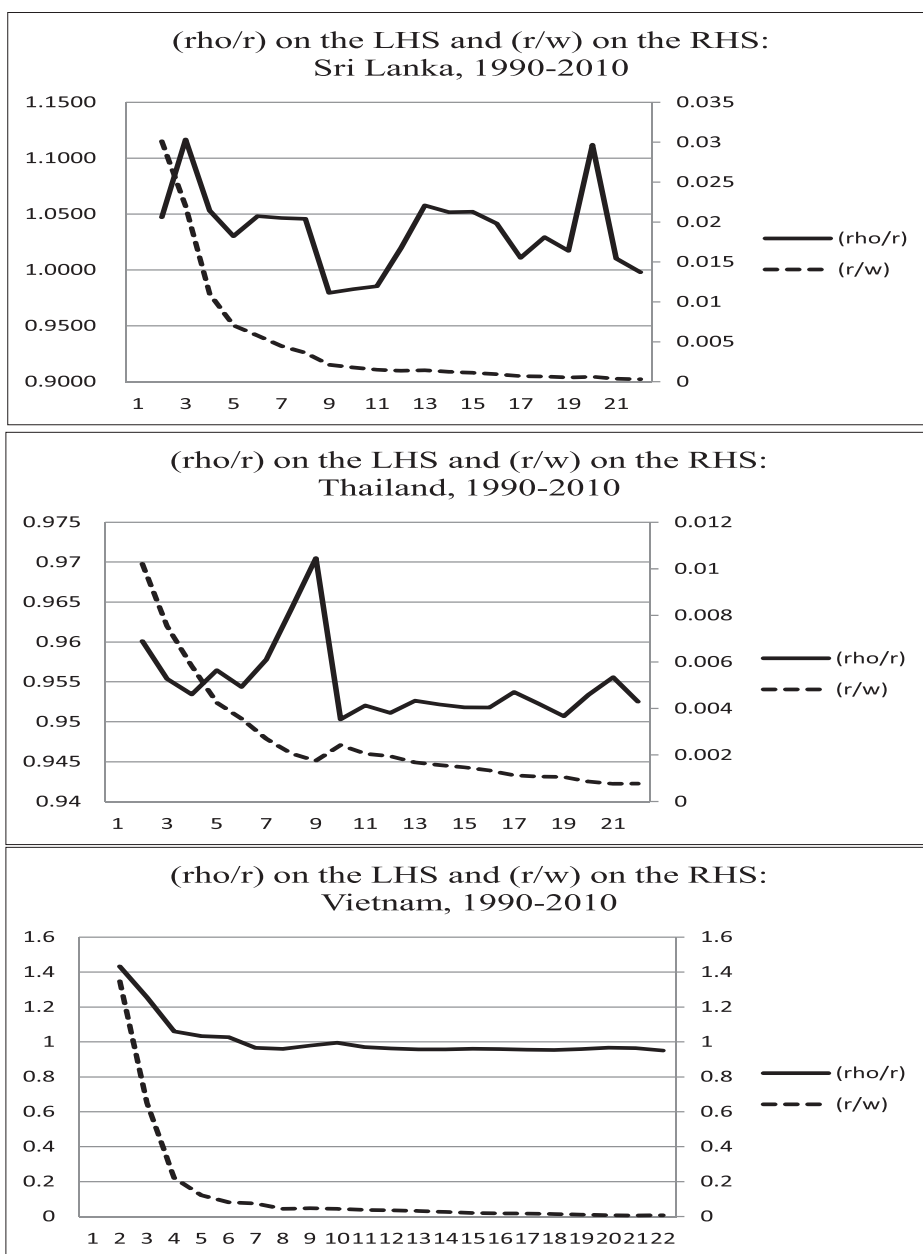
Fig. 3 (rho/r) on the LHS and (r/w) on the RHS: India, Indonesia, Japan, and Korea



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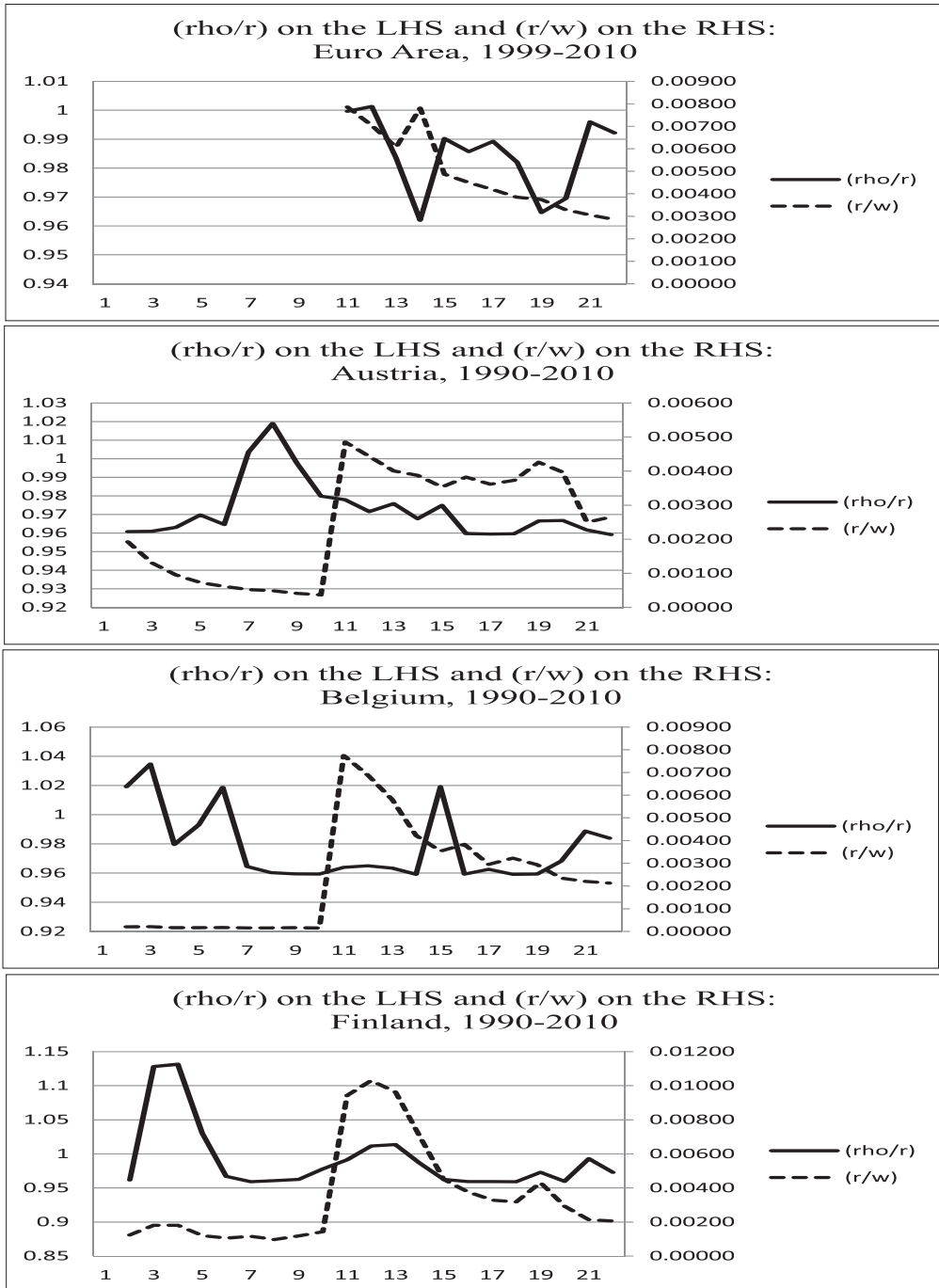
Fig. 4 (ρ/r) on the LHS and (r/w) on the RHS: Malaysia, Philippines, and Singapore

Relative Price Level of Consumer Goods to Producer Goods, (rho/r) , and (r/w)



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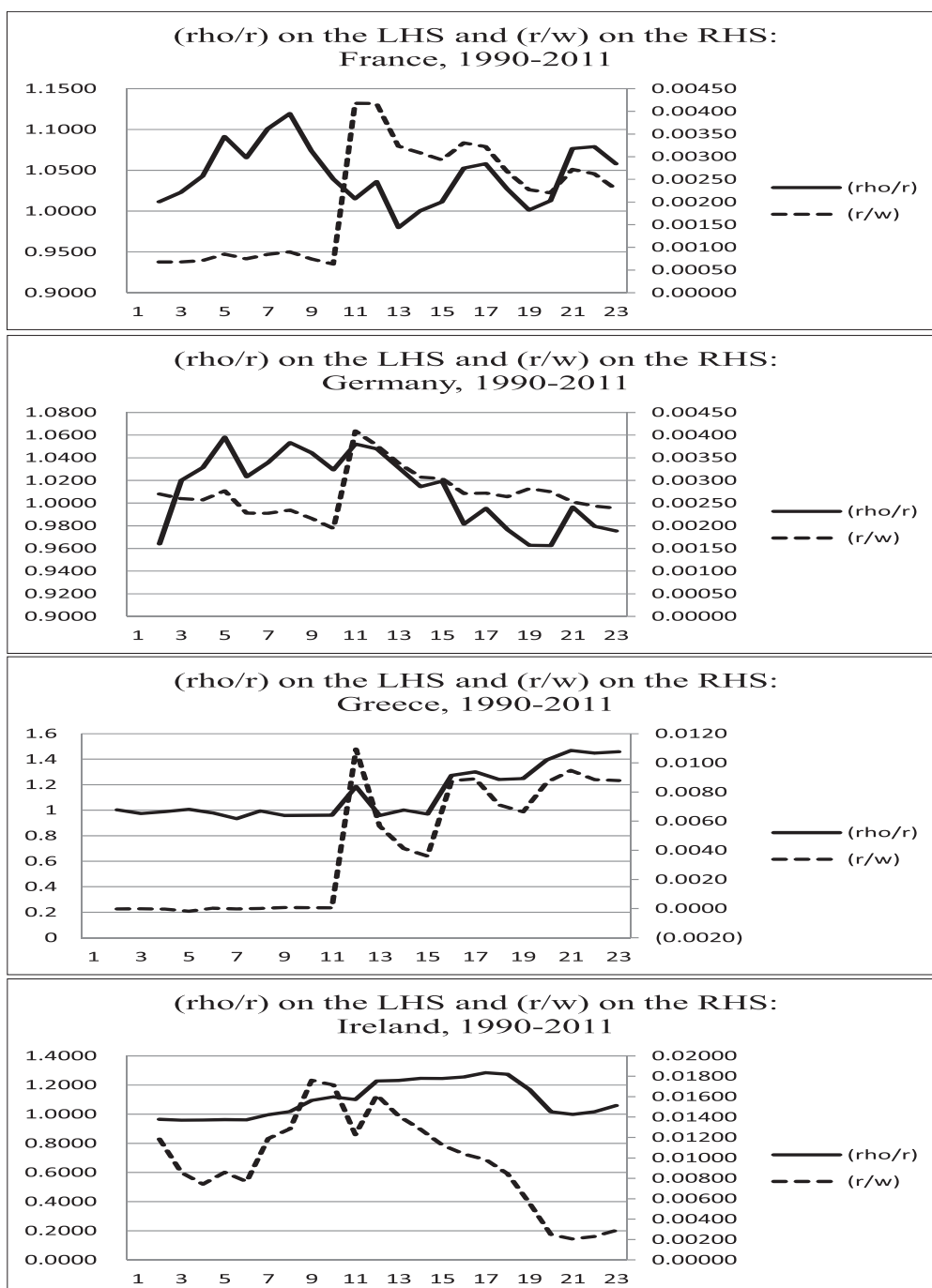
Fig. 5 (rho/r) on the LHS and (r/w) on the RHS: Si Lanka, Thailand, Vietnam



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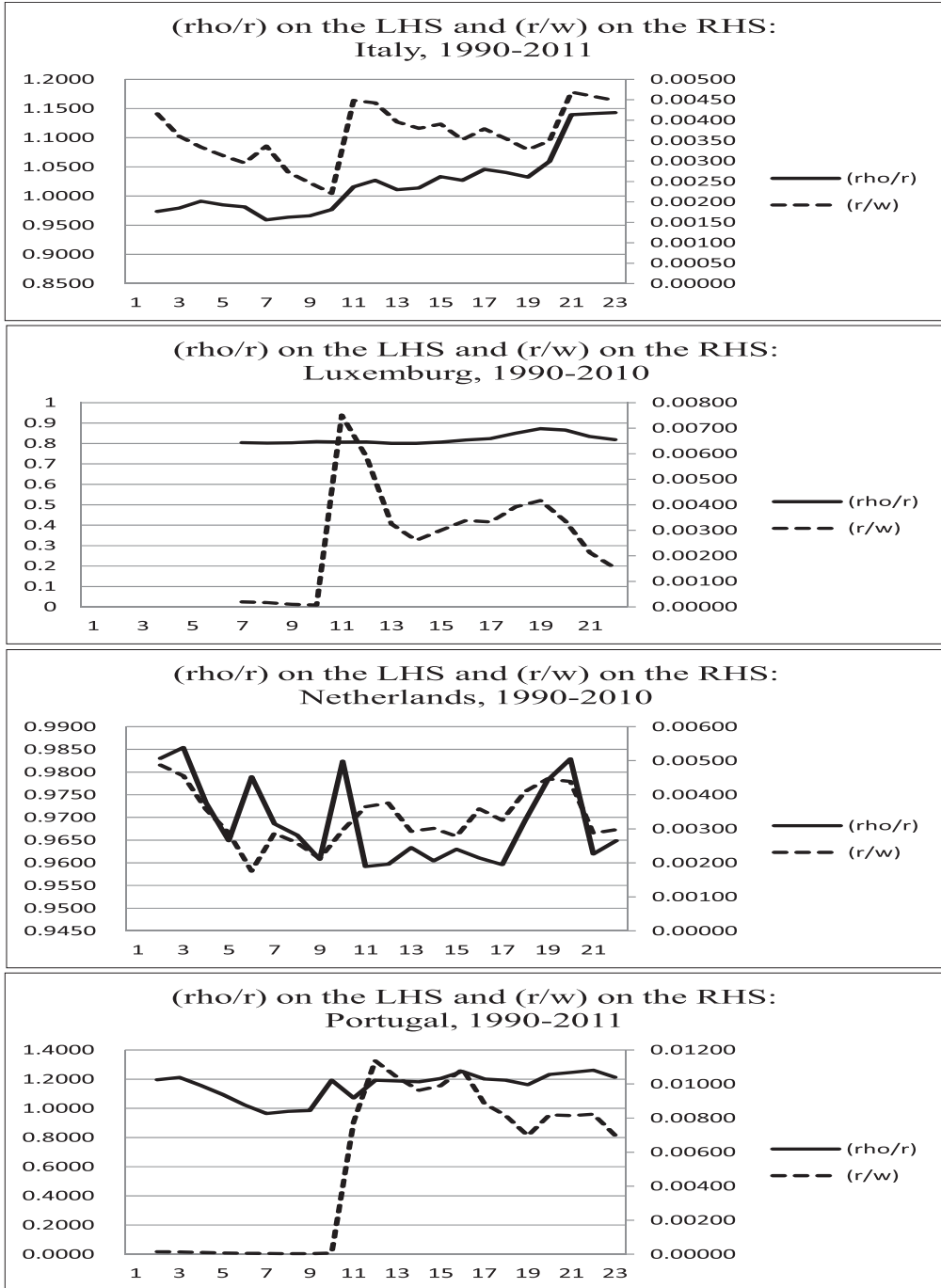
Fig. 6 (ρ/r) on the LHS and (r/w) on the RHS: Euro area, Austria, Belgium, and Finland

Relative Price Level of Consumer Goods to Producer Goods, (rho/r) , and (r/w)



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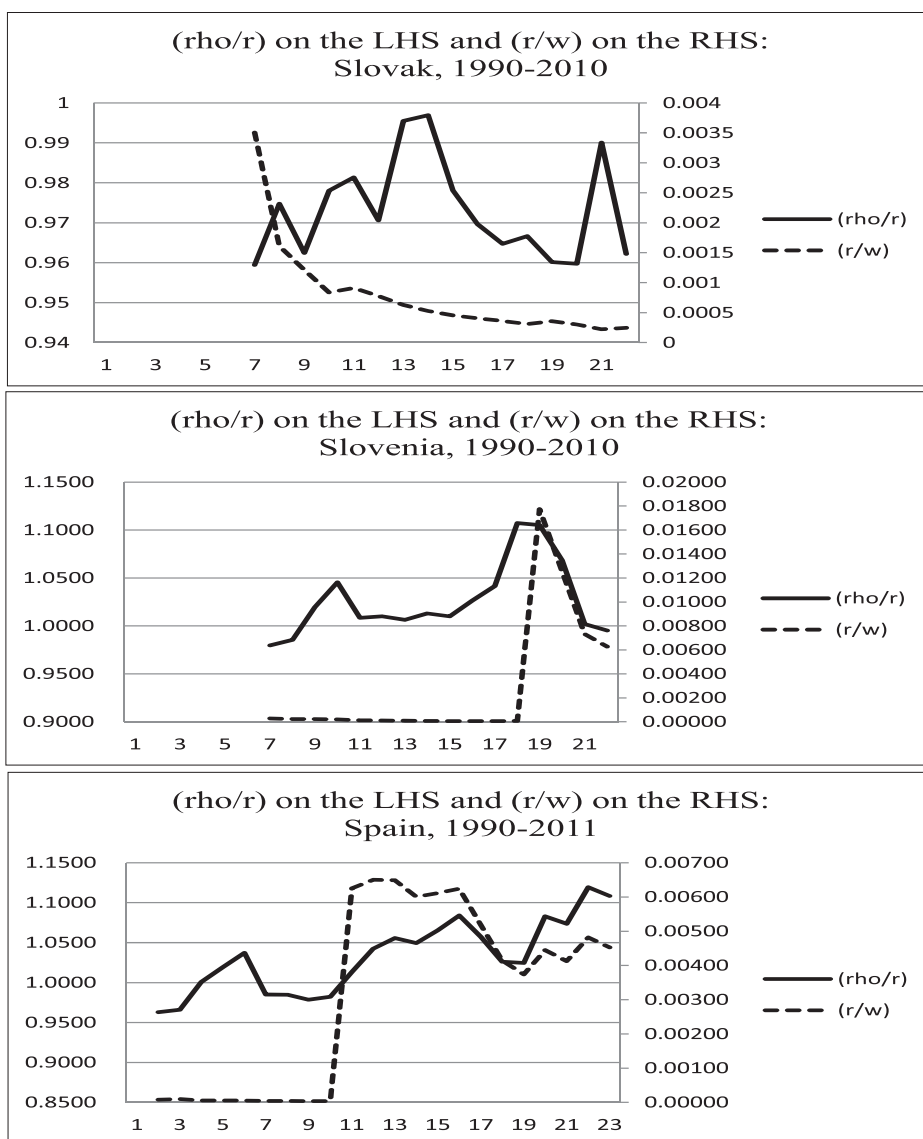
Fig. 7 (rho/r) on the LHS and (r/w) on the RHS: France, Germany, Greece, and Ireland



Data source: The KEWT database, 1960/90 to 2010/2011, for 68 countries, whose original statistics data (10 real assets and 15 financial assets), from International Financial Statistics Yearbook, IMF.

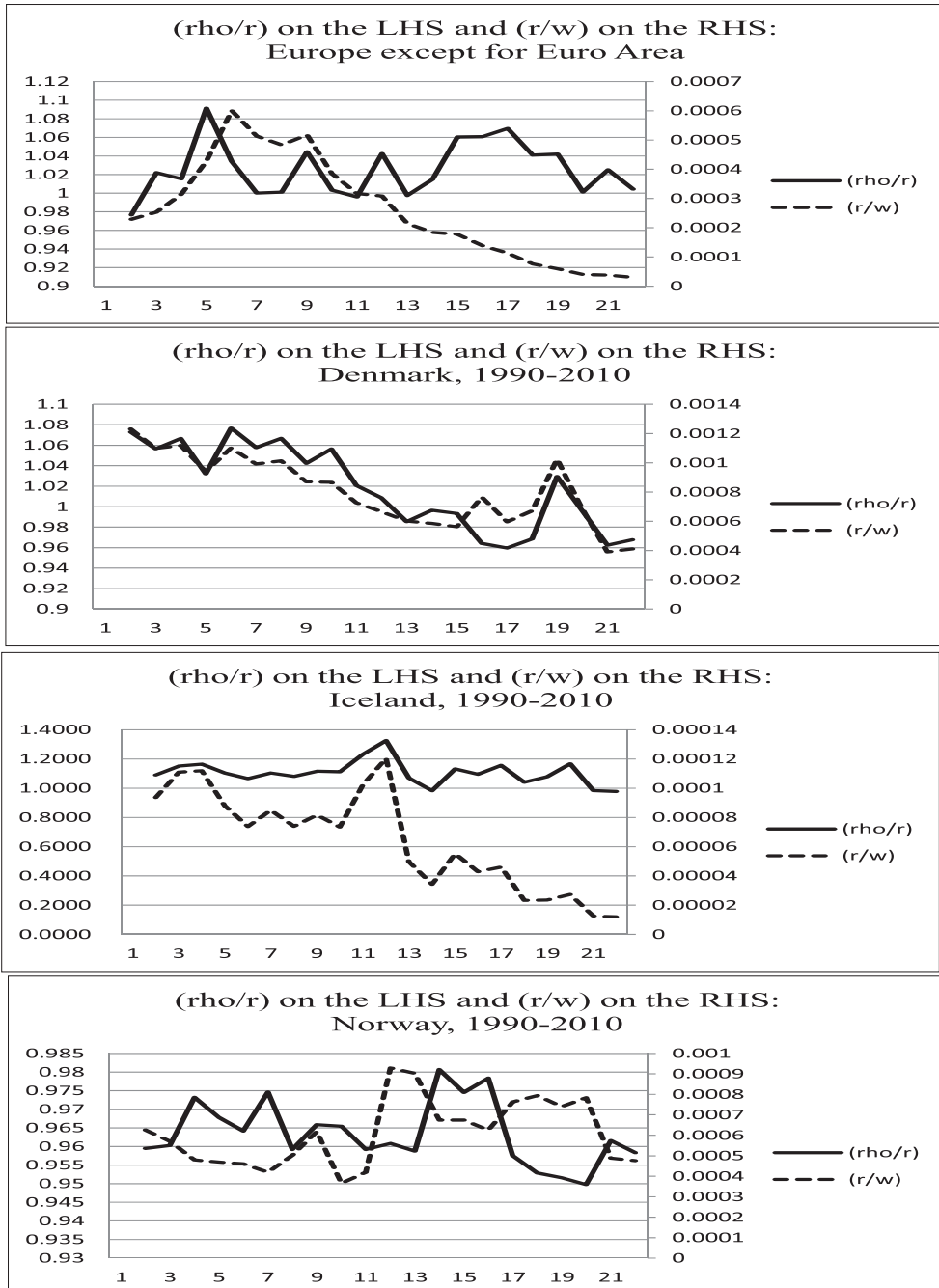
Fig. 8 (ρ/r) on the LHS and (r/w) on the RHS: Italy, Luxemburg, Netherlands, and Portugal

Relative Price Level of Consumer Goods to Producer Goods, (rho/r) , and (r/w)



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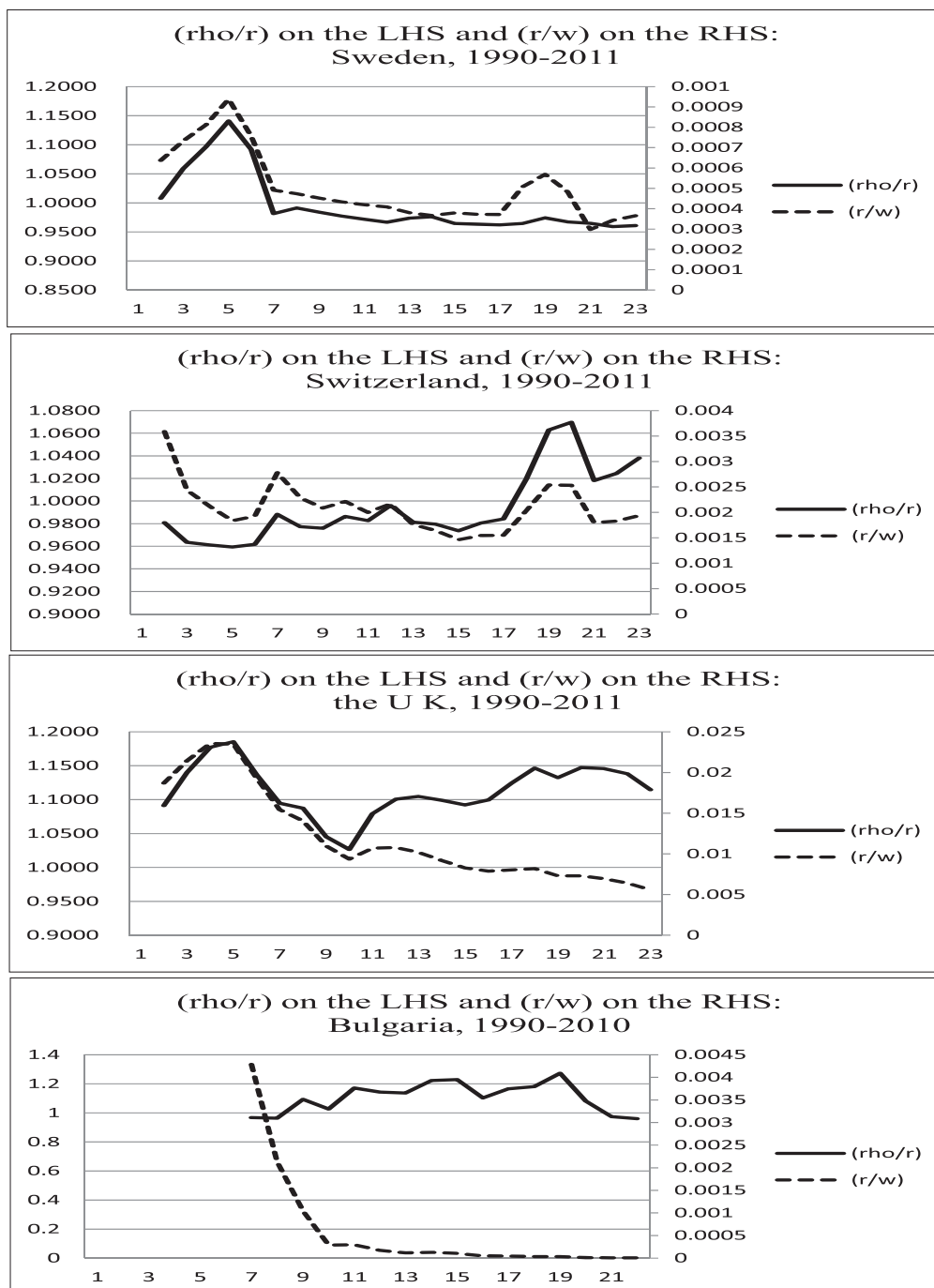
Fig. 9 (rho/r) on the LHS and (r/w) on the RHS: Slovak, Slovenia, and Spain



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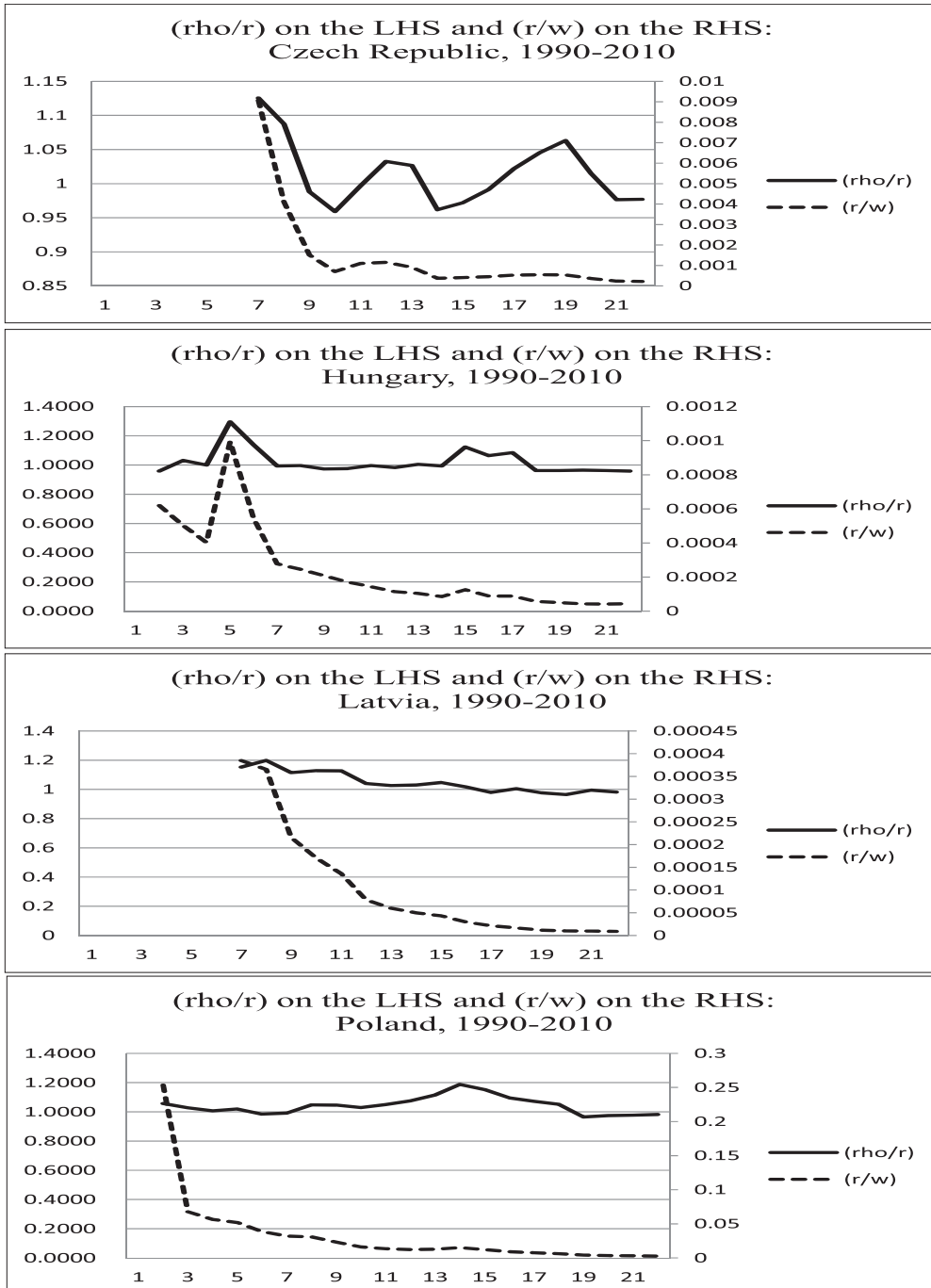
Fig. 10 (ρ/r) on the LHS and (r/w) on the RHS: Europe except for Euro area, Denmark, Iceland, and Norway

Relative Price Level of Consumer Goods to Producer Goods, (rho/r) , and (r/w)



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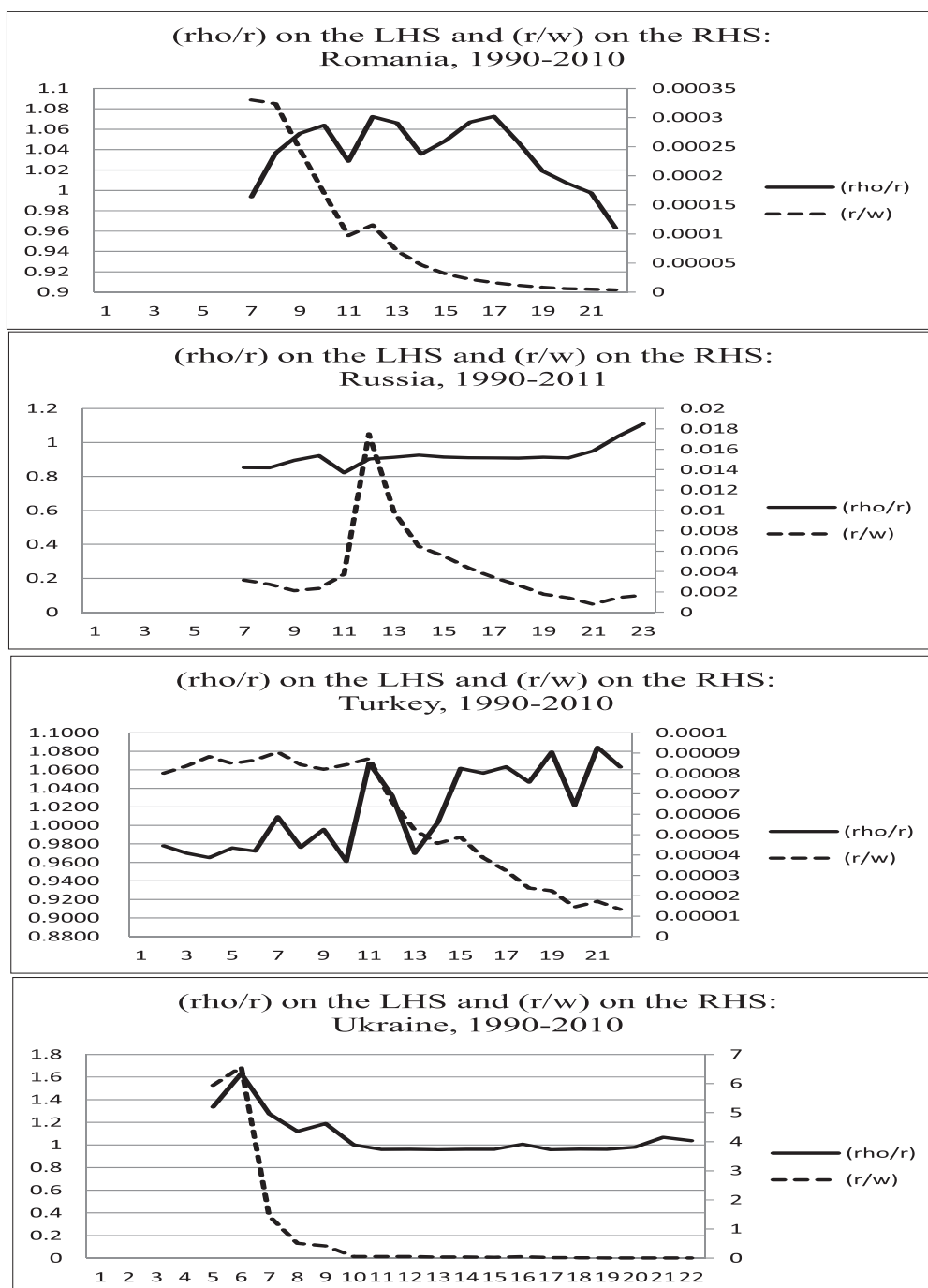
Fig. 11 (rho/r) on the LHS and (r/w) on the RHS: Sweden, Switzerland, the UK, and Bulgaria



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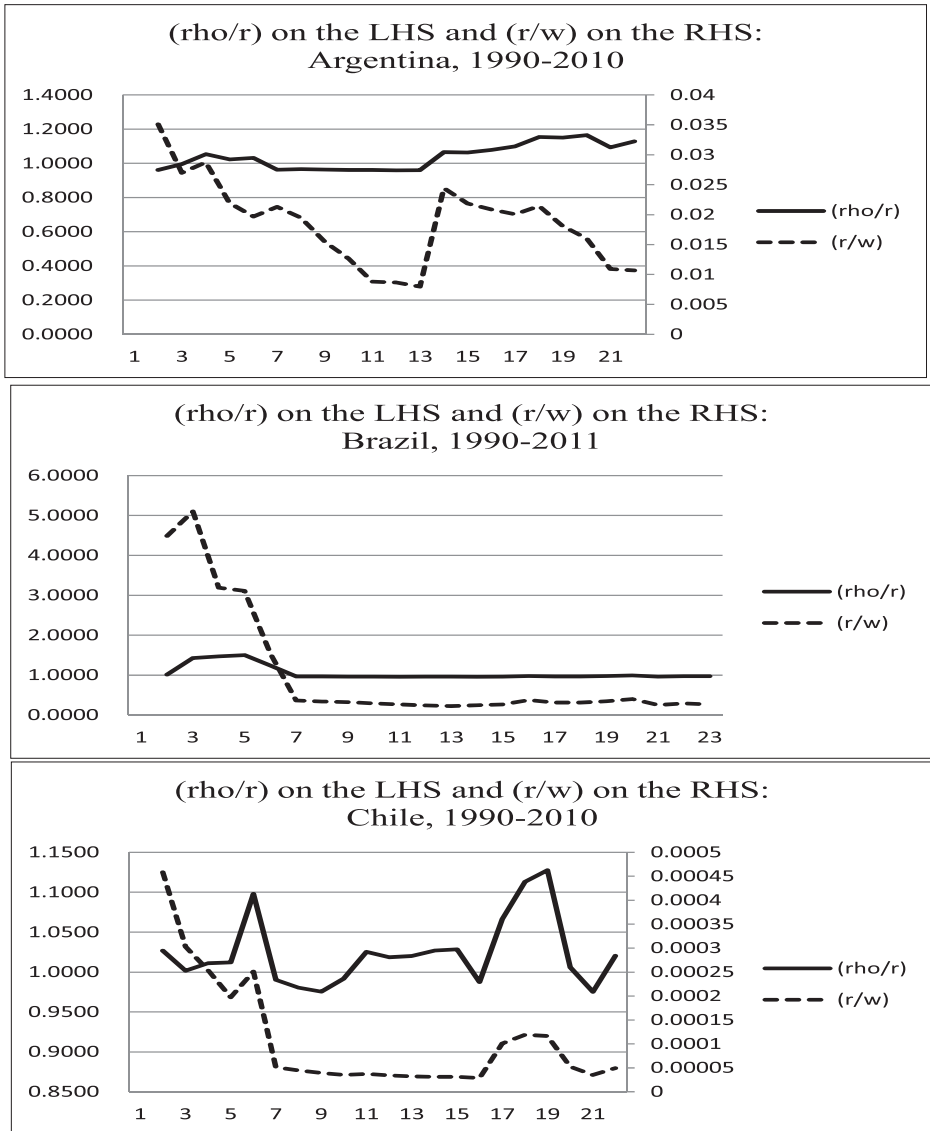
Fig. 12 (ρ/r) on the LHS and (r/w) on the RHS: Czech Republic, Hungary, Latvia, and Poland

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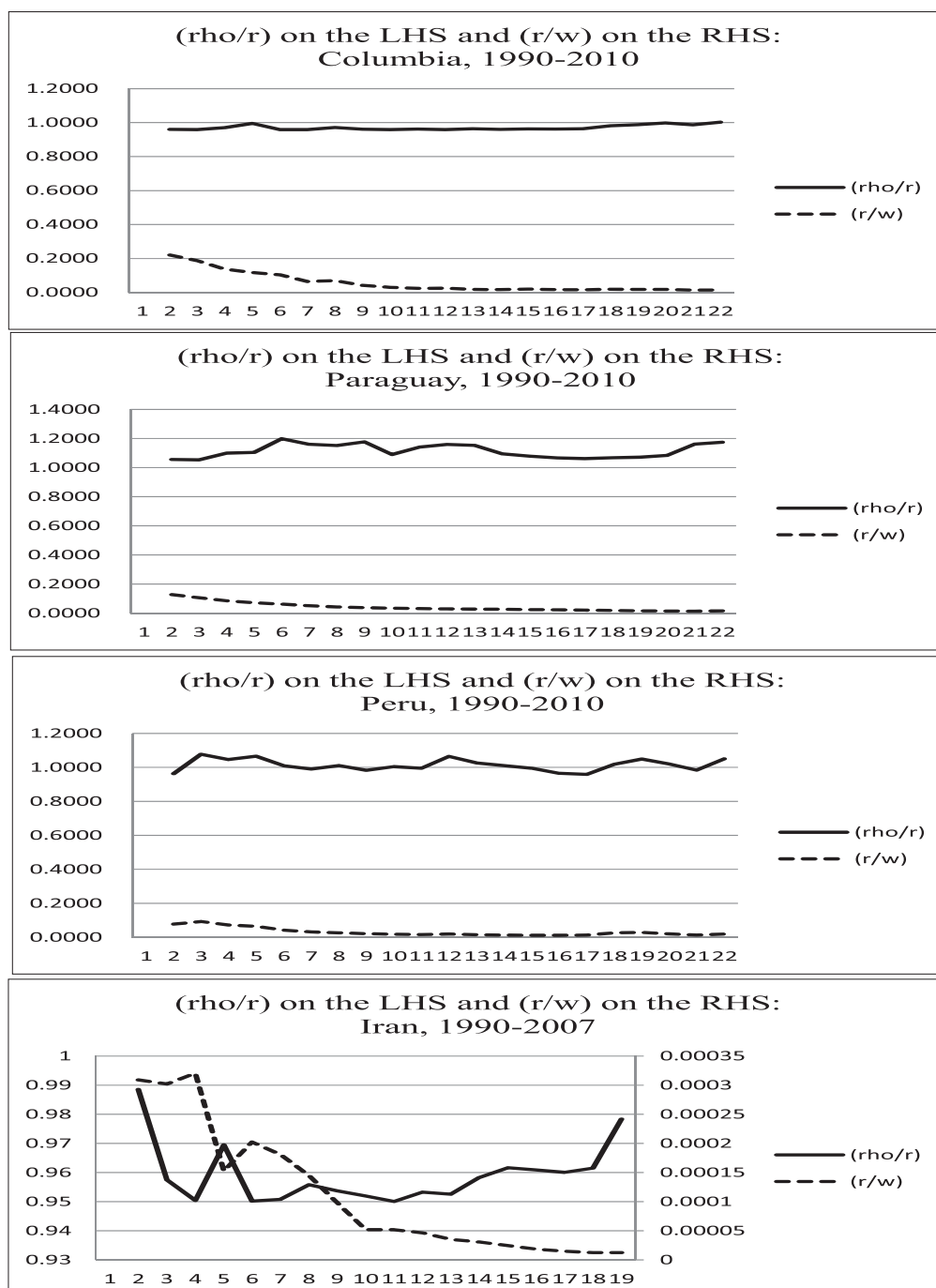
Fig. 13 (rho/r) on the LHS and (r/w) on the RHS: Romania, Russia, Turkey, and Ukraine



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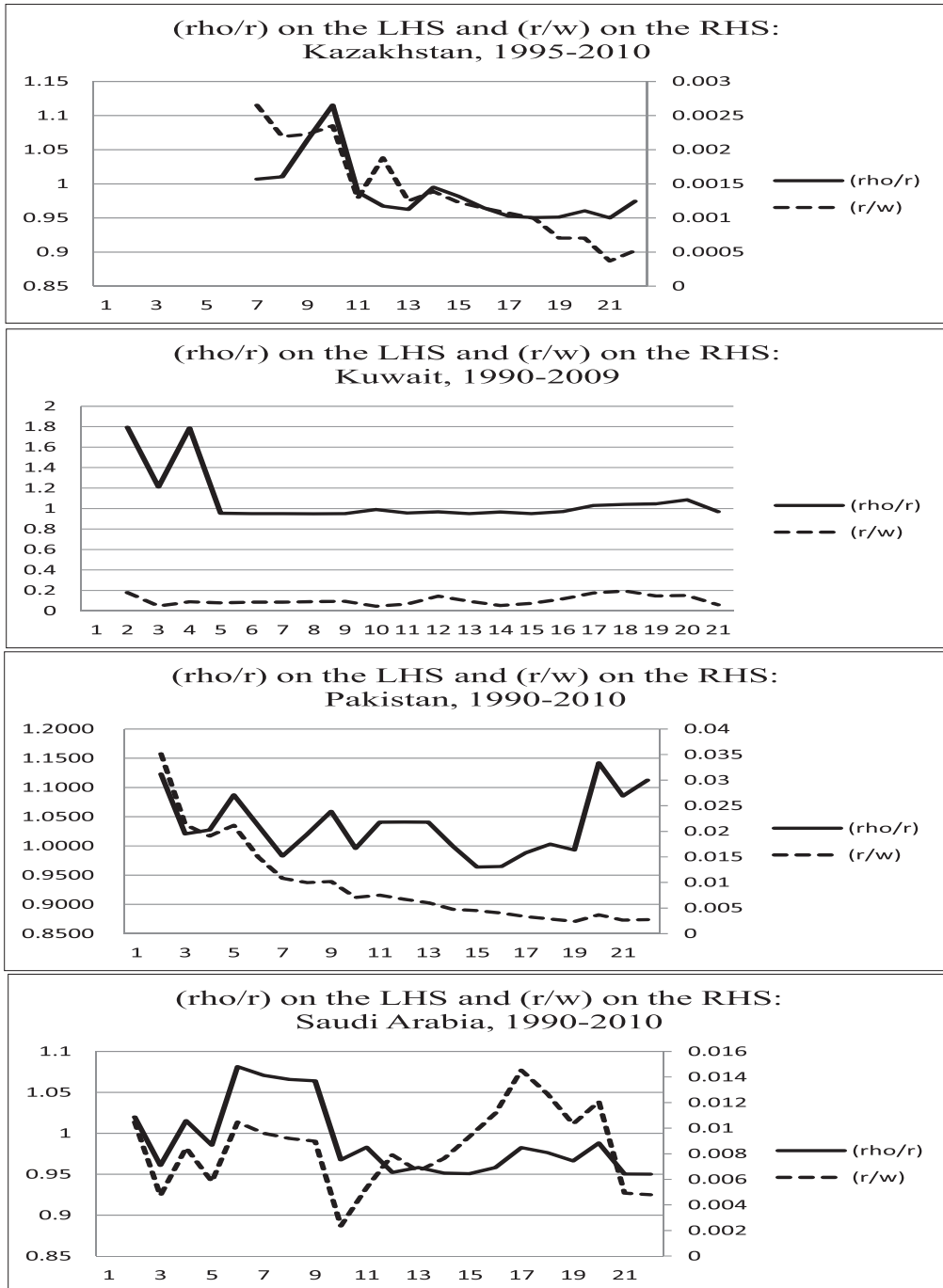
Fig. 14 (rho/r) on the LHS and (r/w) on the RHS: Argentina, Brazil, and Chile

Relative Price Level of Consumer Goods to Producer Goods, (rho/r) , and (r/w)



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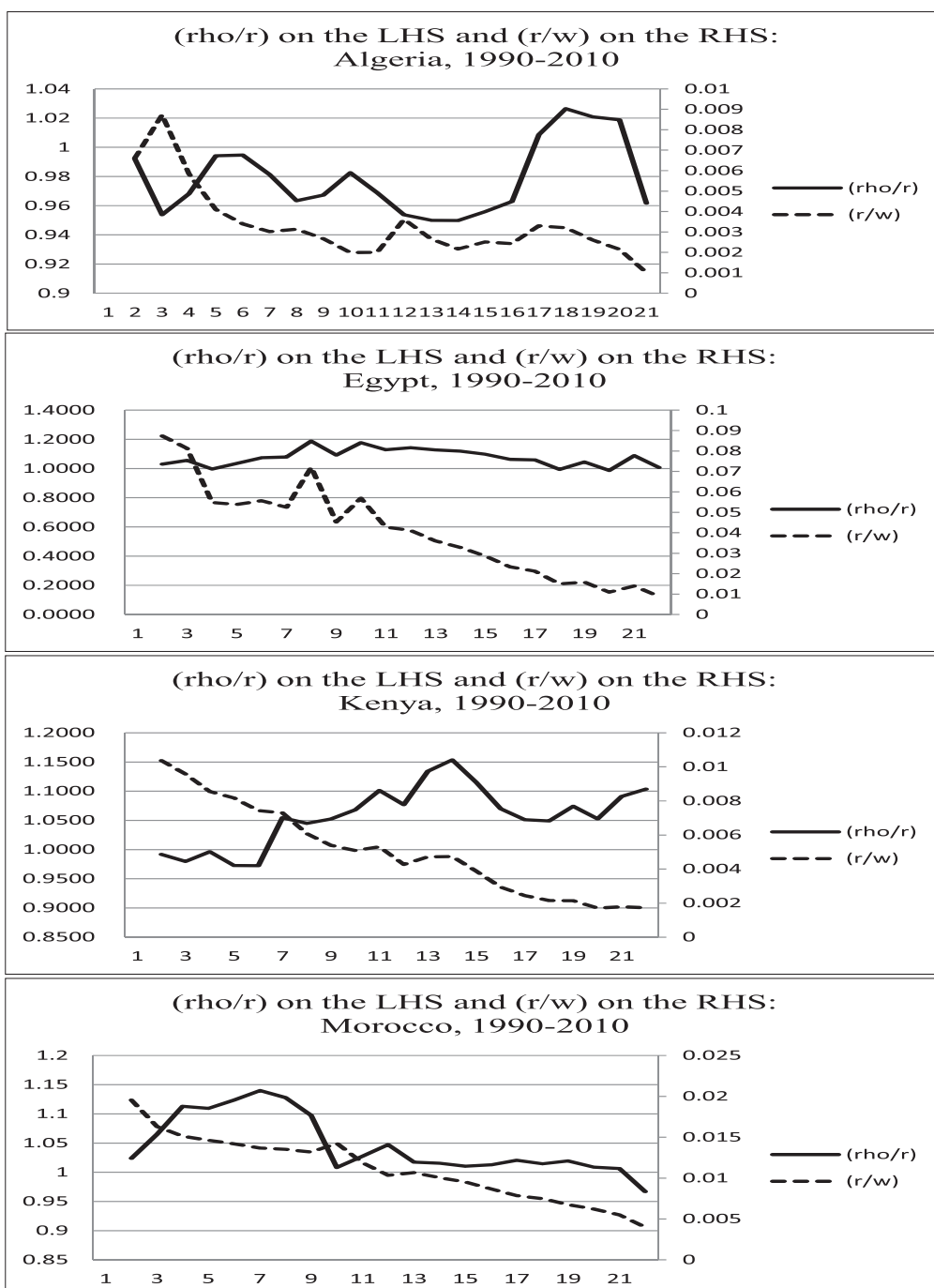
Fig. 15 (rho/r) on the LHS and (r/w) on the RHS: Columbia, Paraguay, Peru, and Iran



Data source: The KEWT database, 1960/90 to 2010/2011, for 68 countries, whose original statistics data (10 real assets and 15 financial assets), from International Financial Statistics Yearbook, IMF.

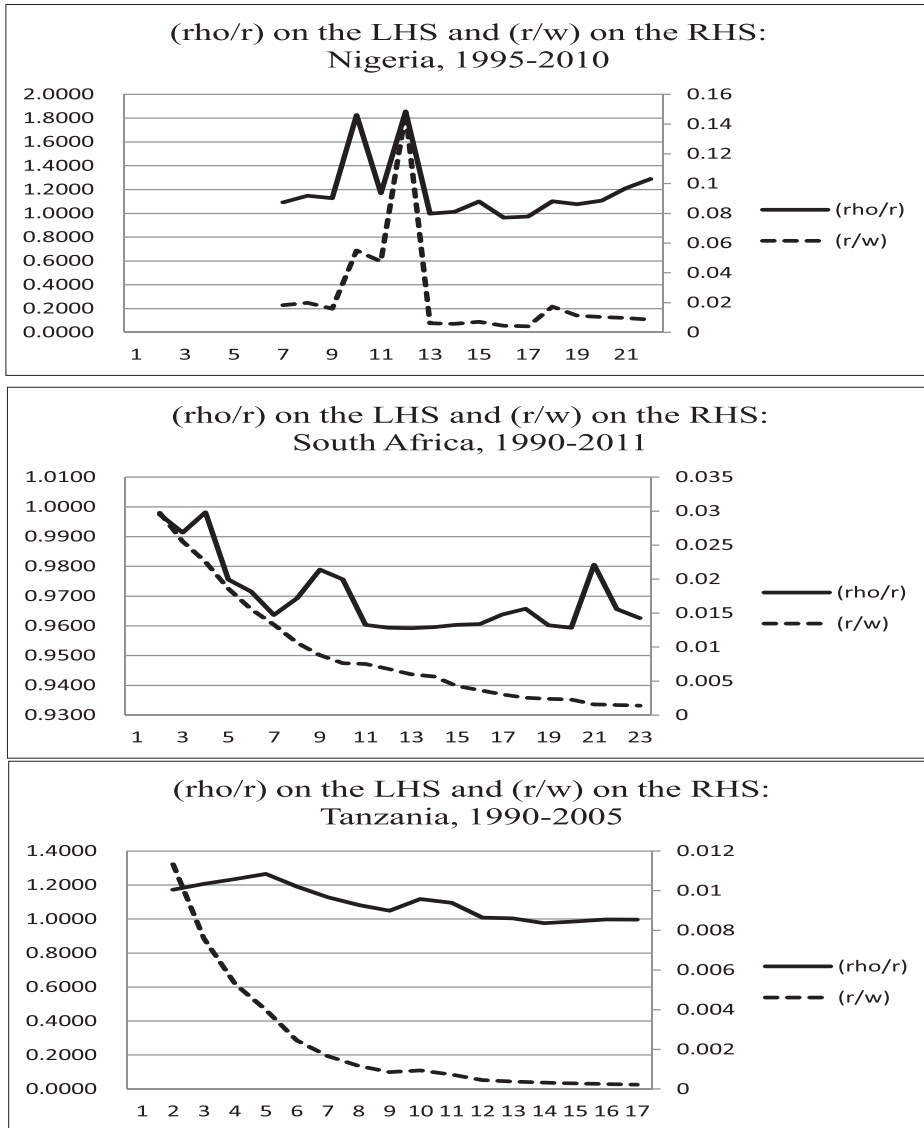
Fig. 16 (ρ/r) on the LHS and (r/w) on the RHS: Kazakhstan, Kuwait, Pakistan, and Saudi Arabia

Relative Price Level of Consumer Goods to Producer Goods, (rho/r) , and (r/w)



Data source: The KEWT database, 1960/90 to 2010/2011, for 68 countries, whose original statistics data (10 real assets and 15 financial assets), from International Financial Statistics Yearbook, IMF.

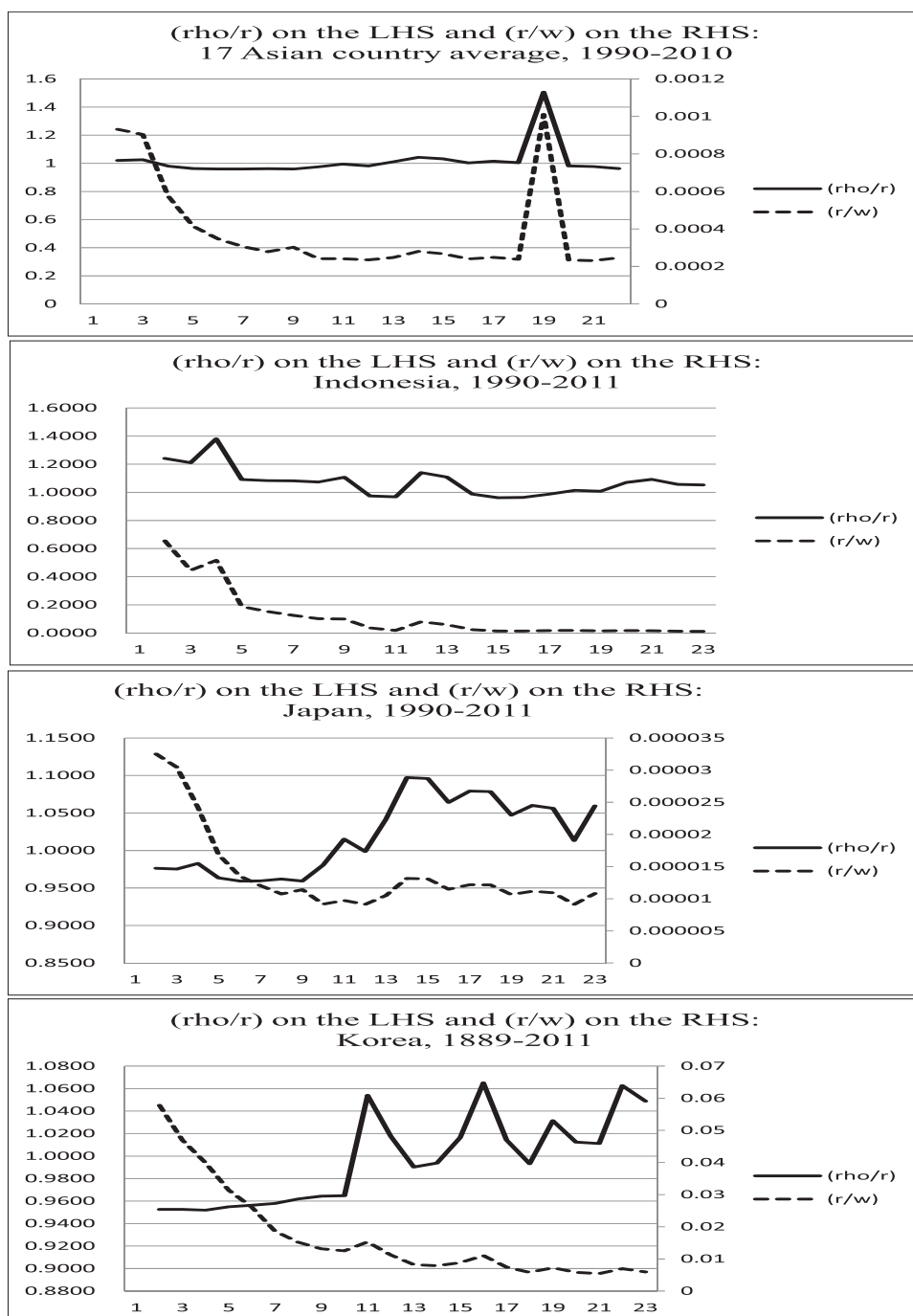
Fig. 17 (rho/r) on the LHS and (r/w) on the RHS: Algeria, Egypt, Kenya, and Morocco



Data source: The KEWT database, 1960/90 to 2010/2011, for 68 countries, whose original statistics data (10 real assets and 15 financial assets), from International Financial Statistics Yearbook, IMF.

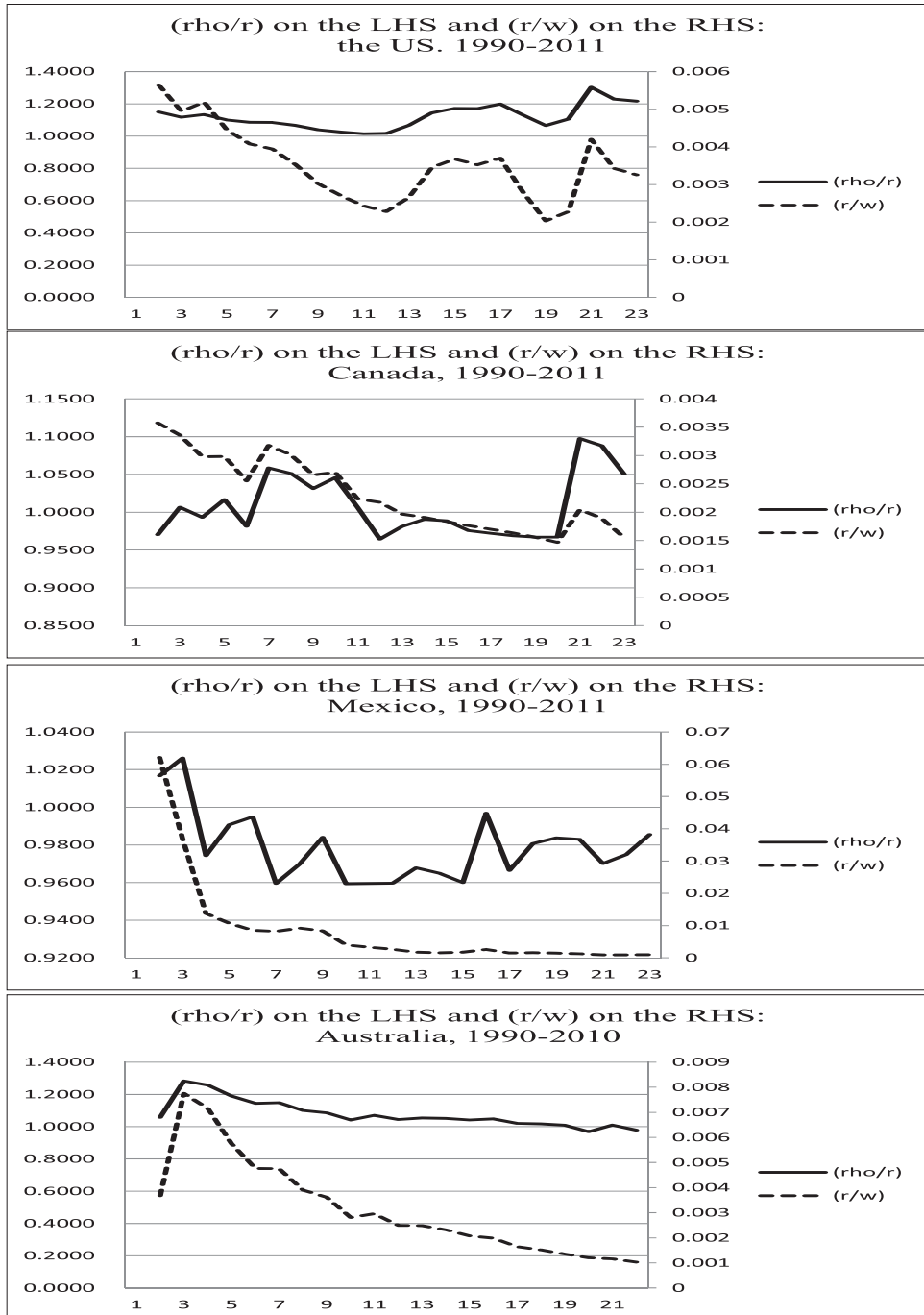
Fig. 18 (ρ/r) on the LHS and (r/w) on the RHS: Nigeria, South Africa, and Tanzania

Relative Price Level of Consumer Goods to Producer Goods, (rho/r) , and (r/w)



Data source: The KEWT database, 1960/90 to 2010/2011, for 68 countries, whose original statistics data (10 real assets and 15 financial assets), from International Financial Statistics Yearbook, IMF.

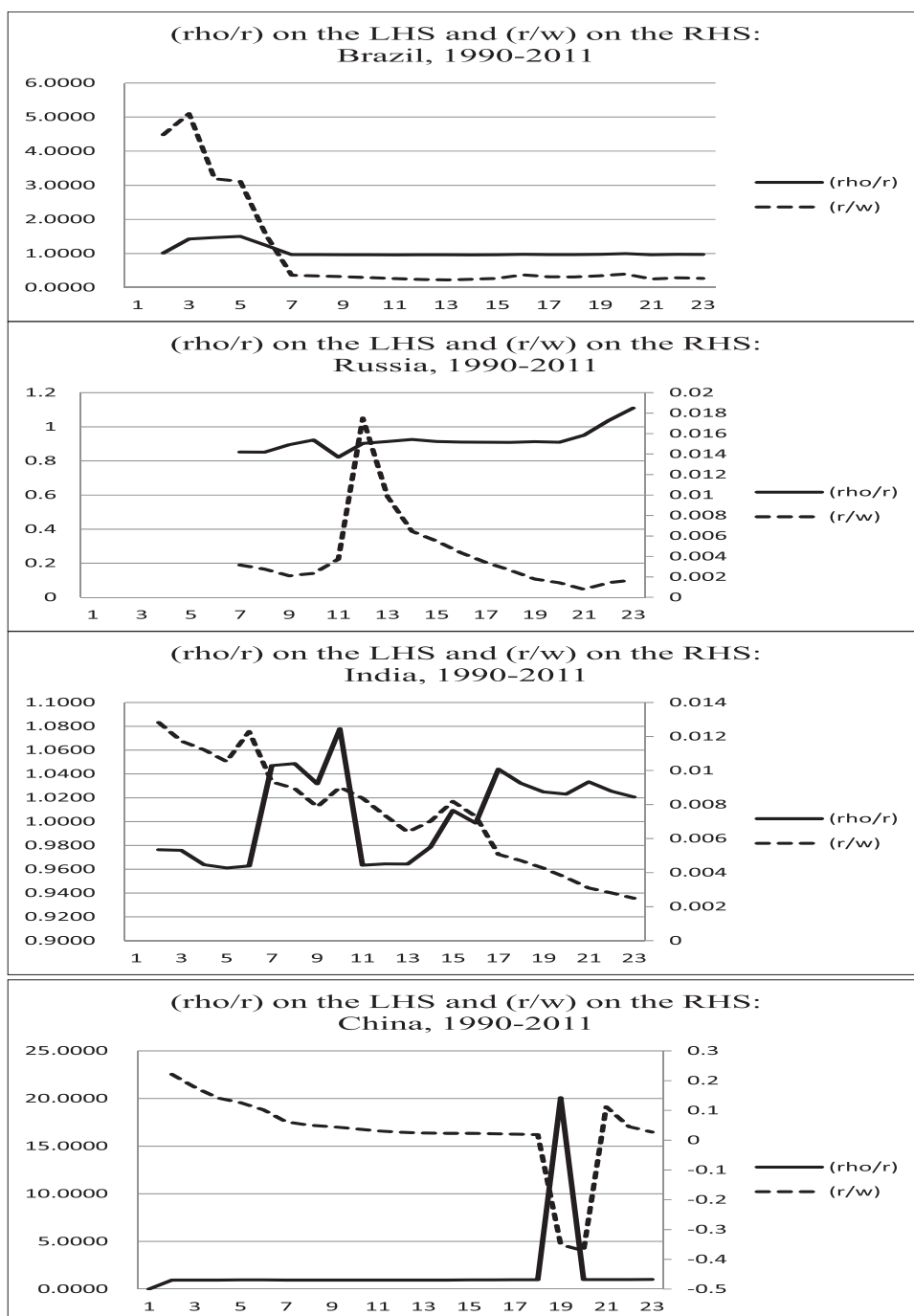
Fig. A1 (rho/r) on the LHS and (r/w) on the RHS: Asia-area by country



Data source: The KEWT database, 1960/90 to 2010/2011, for 68 countries, whose original statistics data (10 real assets and 15 financial assets), from International Financial Statistics Yearbook, IMF.

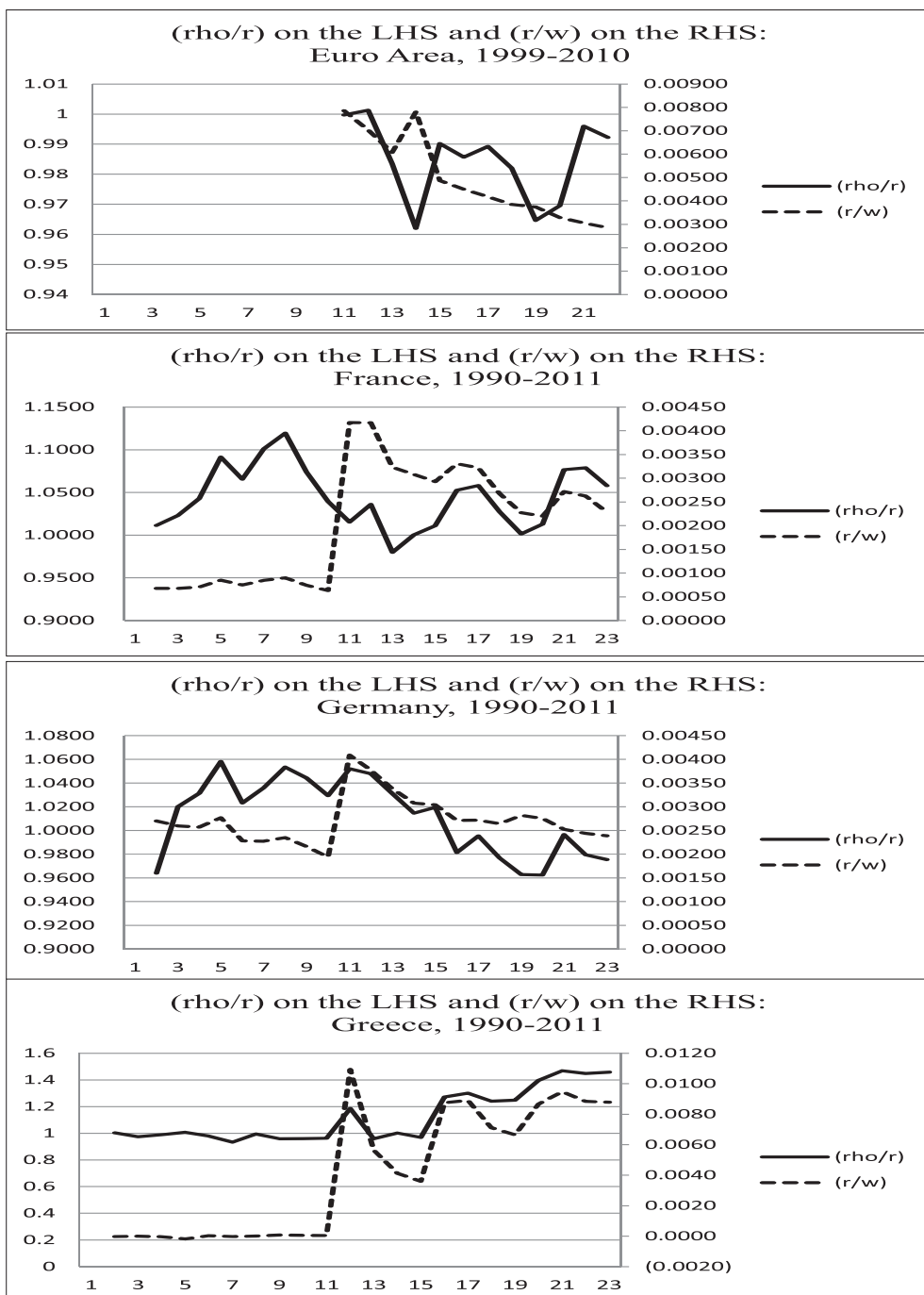
Fig. A2 (ρ/r) on the LHS and (r/w) on the RHS: North America-area by country

Relative Price Level of Consumer Goods to Producer Goods, (rho/r) , and (r/w)



Data source: The KEWT database, 1960/90 to 2010/2011, for 68 countries, whose original statistics data (10 real assets and 15 financial assets), from International Financial Statistics Yearbook, IMF.

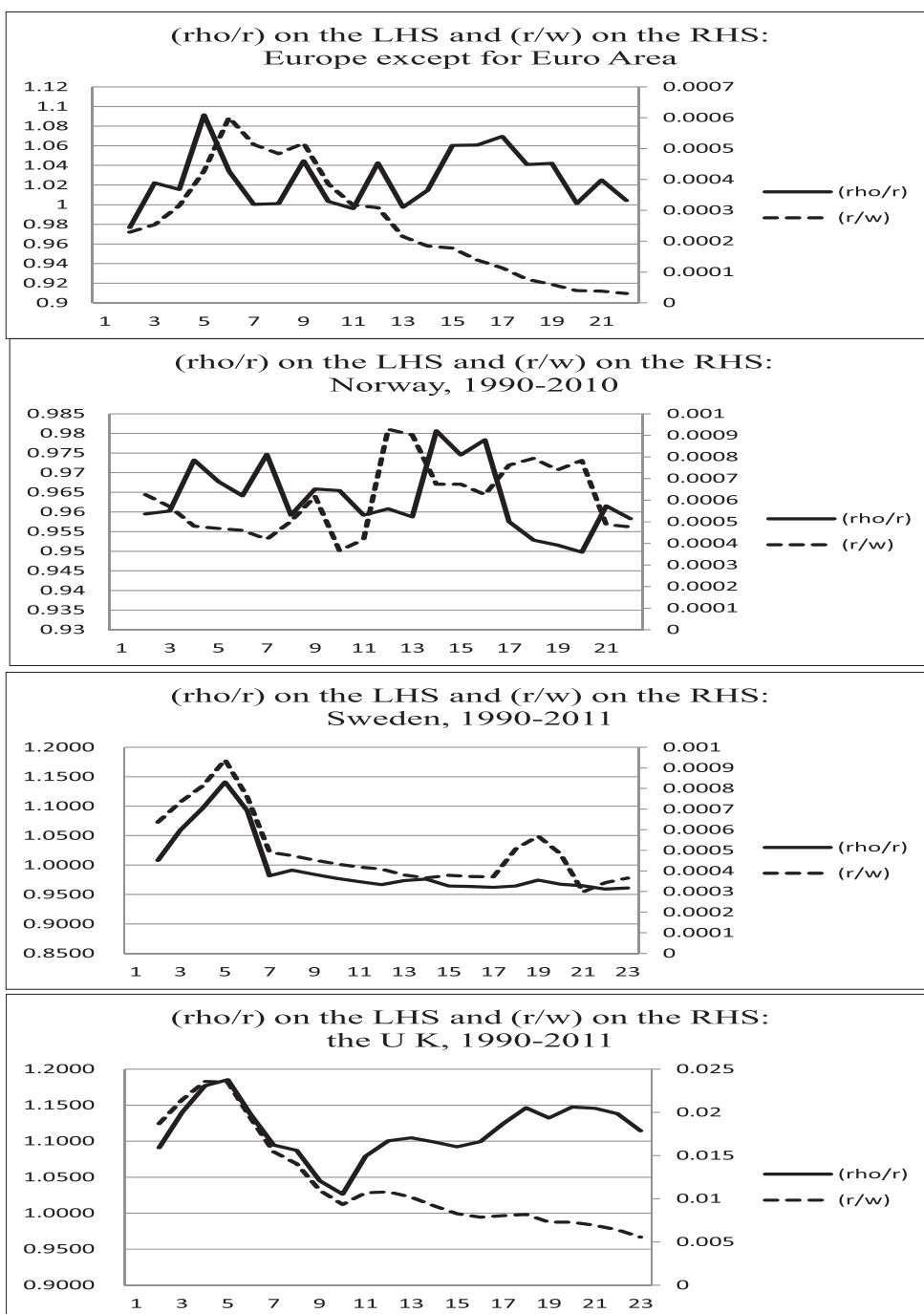
Fig. A3 (rho/r) on the LHS and (r/w) on the RHS: BRIC- area



Data source: The KEWT database, 1960/90 to 2010/2011, for 68 countries, whose original statistics data (10 real assets and 15 financial assets), from International Financial Statistics Yearbook, IMF.

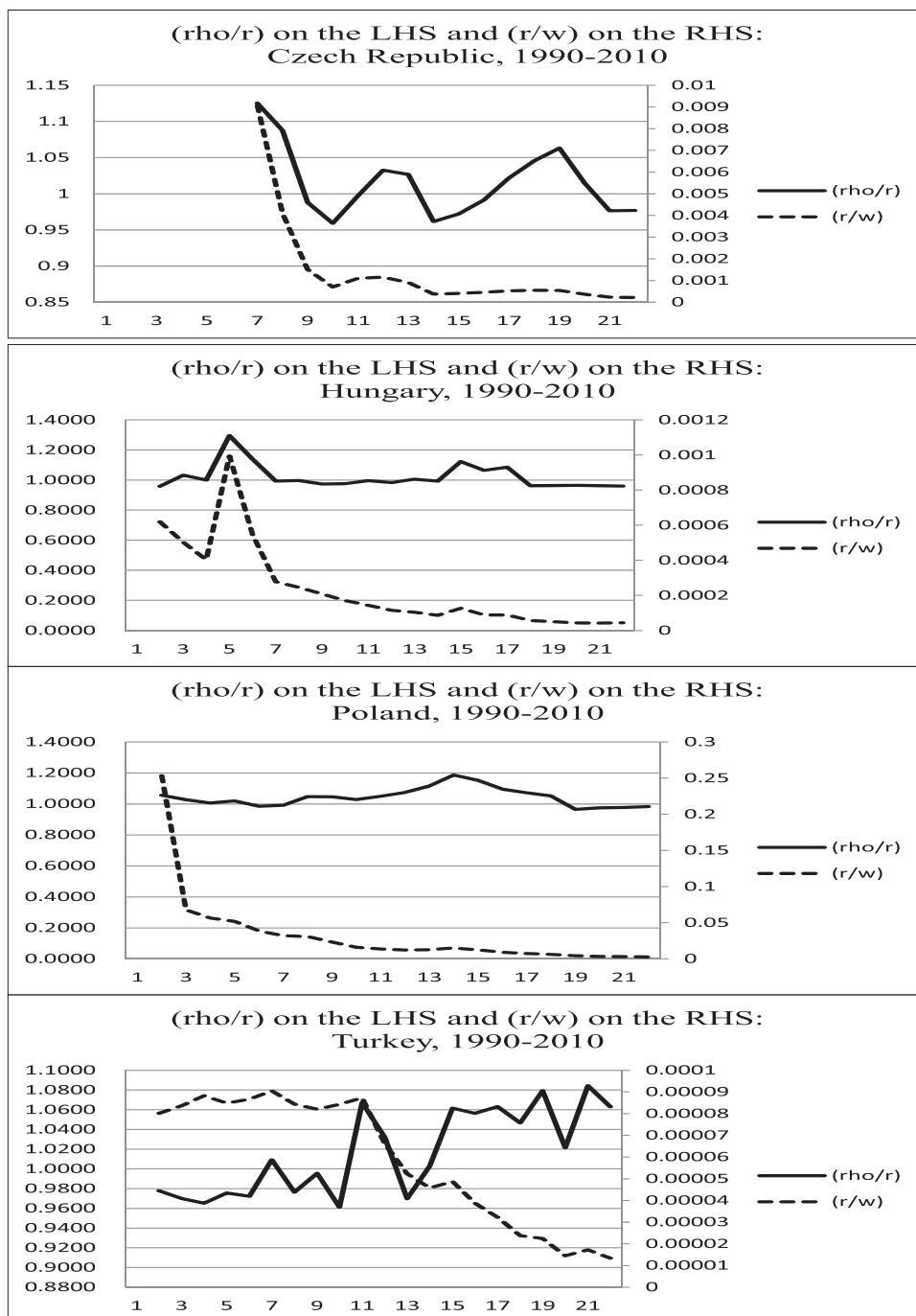
Fig. A4 (rho/r) on the LHS and (r/w) on the RHS: Euro-areas by country

Relative Price Level of Consumer Goods to Producer Goods, (rho/r) , and (r/w)



Data source: The KEWT database, 1960/90 to 2010/2011, for 68 countries, whose original statistics data (10 real assets and 15 financial assets), from International Financial Statistics Yearbook, IMF.

Fig. A5 (rho/r) on the LHS and (r/w) on the RHS: EU-area excluding Euro



Data source: The KEWT database, 1960/90 to 2010/2011, for 68 countries, whose original statistics data (10 real assets and 15 financial assets), from International Financial Statistics Yearbook, IMF.

Fig. A6 (rho/r) on the LHS and (r/w) on the RHS: East Europe-area