Ángel Gerardo García Banchs
Caracas - 13/02/1976

Nacionalidad: Venezolana y Española
garciabanchs@econometrica.com.ve

Educación

2004 - 2009	Doctor (PhD) en Economía: Universidad de Siena, Italia Título de tesis: "Essays on Money, and the Asymmetries of the International Monetary System". Tutor: Ernesto Screpanti, Ed Nell, Luis Mata Mollejas
2004 - 2005	Máster en Economía: Universidad de Siena, Italia Título de tesis: "The Post Keynesian theory of Banking and the Endogenous Money Supply". Tutor: Ernesto Screpanti
2002 - 2003	Máster en Economía y Finanzas: Warwick, Inglaterra Título de tesis: "Partial Dollarization: A currency-matching rule and its implications for monetary policy and welfare". Tutor: Lei Zhang
1994 - 1999	Economista: Universidad Central de Venezuela Título de tesis: "Implicaciones del contexto inflacionario sobre la inversión en el sector manufacturero venezolano" Tutor: Luis Mata Mollejas

Perfil

Profesor universitario, investigador, y consultor con 15 años de experiencia, especialista en macroeconomía, política económica, microeconomía, planificación empresarial (estratégica y financiera), economía de América Latina y teoría de juegos; conferencista empresarial y académico, con participación activa en revistas, radio, prensa y televisión.

Experiencia Profesional

Nov 2009 – Presente

Econométrica (@Econometrica), consultora líder en Venezuela.

Cargo: Presidente, fundador, y miembro del Consejo de Administración.

Responsabilidades: (i) ser consultor en economía y finanzas para más de doscientas empresas entre empresas grandes, medianas y pequeñas, nacionales y multinacionales; (ii) responder a consultas de medios, televisión, radio y prensa (Wall Street Journal, The New York Times, El Nuevo Herald, BBC, ABC, El País, Financial Times, CNN en Español, NTN24, entre otros); (iii) desarrollar productos y negocios, supervisar actividades operativas y financieras de la empresa; (iv) decisiones de inversión y endeudamiento; (v) políticas de salarios y precios; (vi) revisar informes financieros y de ventas en Consejo de Administración; (vii) supervisar las actividades centrales del Departamento de Investigación Económica; (viii) dar charlas sobre perspectivas y escenarios a los clientes, responder a sus consultas por Skype, Whatsapp y teléfono; (ix) ser orador en eventos y conferencias de negocios de la firma; (x) desarrollar modelos, entre ellos econométricos para estimar elasticidades (precio e ingreso) de la demanda de productos de clientes (Pepsi-Cola, Coca-Cola, Lipton Tea, Gatorade, Sporade, etc.). Algunas referencias/clientes: Telefónica, Samsung, Brighstar, P & G, Pepsi-Cola, Pepsico, Johnson & Johnson, Pfizer, Novonordisk, Novartis, L'Oreal, Amway, 3M, Duncan, ENI, Honeywell, Rockwell, Fuller, KPMG , Santander, Del Monte, Polar.

Junio 2000 – Septiembre 2002

Schering-Plough, Caracas, Venezuela

Cargo: Economista Senior en el Departamento de Planificación.

Responsabilidades: (i) planificación comercial y análisis financiero de todos los departamentos (productos éticos, salud animal y productos de consumo masivo); proyección de ventas en volumen y valor y otros ingresos; proyección de costos y gastos tales como promoción de productos, venta de campo, distribución, administración, mercadotecnia, investigación, etc.; responsable de controlar y autorizar el gasto presupuestario de diferentes recursos tales como recursos de promoción de productos; responsable de preparar y presentar informes financieros al Director Financiero, y los Gerentes de Operaciones y Generales, el Informe del Gerente, el Informe de Ventas y otros.

Junio 1998 – Junio 2000

Citibank Capital Markets, Caracas, Venezuela

Puesto: agente de bolsa de valores. Responsabilidades: (i) a cargo de la colocación, negociación y negociación de diversos bonos corporativos y papeles comerciales de Citimerca, Citibank y muchos otros emisores privados; (ii) a cargo del análisis del mercado monetario, e informes sobre bonos públicos (gubernamentales) a largo plazo, como TEM, DPN, REPO, etc.

Experiencia Académica

- New School University, NY, EE. UU.:

Profesor Visitante en el New School for Social Research (sep 2006 – sep 2009).

- Universidad Central de Venezuela:

Profesor de Microeconomía I en el Doctorado de Economía y la Maestría en Teoría y Política Económica Avanzada (sep 2009 – sep 2017).

Profesor de Política Económica I en la Escuela de Economía de la Facultad de Ciencias Económicas y Sociales (sep 2009 – sep 2017).

Profesor de Macroeconomía II en el Doctorado de Economía y la Maestría en Teoría y Política Económica Avanzada (sep 2003 – sep 2004).

Profesor de Política Económica en el Centro de Estudios del Desarrollo, CENDES (sep 2003 – sep 2004).

Investigador en el Departamento de Economía del Centro de Estudios del Desarrollo, CENDES (sep 2003 – sep 2017).

Experiencia como conferencista

1. - Desafíos Empresariales 2017: ¿Cómo Sobrevivir a la Crisis? - Caracas, jueves, 13 de julio de 2017.
2. - Actualización de Perspectivas 2017 - Caracas, jueves, 16 de marzo de 2017.
3. - Foro Perspectivas 2017 - Caracas, jueves, 09 de febrero de 2017.
4. - ¿Ya pasó lo peor? - Caracas, miércoles, 23 de noviembre de 2016.
5. - Desafíos de la crisis en Venezuela - Caracas, jueves, 22 de septiembre de 2016.
6. - Escenarios económicos post 6D - Caracas, miércoles, 22 de junio de 2016.
7. - Perspectivas Económicas 2016 - Caracas, miércoles, 17 de febrero de 2016.
8. - ¿Luz al final del túnel? Coyuntura 2015 - Caracas, martes, 24 de noviembre de 2015.
9. - Coyuntura 2015 - Caracas, martes, 22 de septiembre de 2015
10. - Año de definiciones. Perspectivas 2015 - Caracas, miércoles, 22 de abril de 2015.
11. - ¿Preparados para lo que viene? Perspectivas 2014 - Caracas, jueves, 20 de noviembre de 2014.

12. - Perspectivas 2014 - Gira Maracaibo & Valencia, jueves, 22 de mayo de 2014.
13. - Perspectivas Económicas 2014 - Caracas, jueves, 21 de noviembre de 2013.
14. - Desafíos Económicos Post-electorales - Caracas, jueves, 19 de septiembre de 2013.
15. - Perspectivas Económicas 2013 - Maracaibo, jueves, 23 de mayo de 2013.
16. - Desafíos Empresariales Post-electorales - Caracas, jueves, 21 de marzo de 2013.
17. - Perspectivas Económicas 2013 - Caracas, miércoles, 05 de diciembre de 2012.
18. - "¿Fueron las casas de bolsa culpables de la inflación?" en Mercado de valores y su aporte a la economía nacional: el ahorro y la inversión. Situación actual y Perspectivas, Cámara de Comercio de Caracas (2011).
19. - "Alternativas al modelo rentista petrolero", FACES, UCV (2010).
20. - "Discutamos la Venezuela futura: de la Venezuela rentista al desarrollo transformador", FACES, UCV (2010).
21. "Perspectivas Económicas" en la LXVI Asamblea Anual de Fedecamaras, Puerto Ordaz (2010).
22. - "El Petropopulismo rentista y la crisis económica en Venezuela" en el Foro El petropopulismo y la crisis económica en Venezuela, FACES, Universidad de Carababo (2010).
23. - "Discutamos la Venezuela futura: de la Venezuela rentista al desarrollo transformador", UCV, Caracas (2010).
24. - "La crisis global y del euro, los bonos soberanos, los commodities y el crudo" en el Foro Los riesgos de una nueva crisis económica global y sus implicaciones para Venezuela, Universidad Metropolitana, Caracas (2010).
25. -"El petropopulismo rentista en Venezuela, FACES, UCV (2010).
26. - "Qué pasa y pasará con la economía: Venezuela en estanflación y riesgo", Fedecamaras, Caracas (2010).
27. -"Venezuela y su estanflación: De un control de cambios en cuenta corriente a uno en cuenta corriente y de capital" en el Foro Perspectivas Económicas y

Energéticas 2010, Cámara Petrolera de Venezuela, Hotal Melia, Caracas (2010).

28. - "Un bolívar menos fuerte, más escasez y desempleo: desmontando la teoría de la conspiración" en el Foro Impacto de Medidas Cambiarias, FACES, UCV (2010).
29. - "Relevancia, papel, progreso y desafíos del Mercado de Valores y los Intermediarios Financieros en Venezuela" en el Foro sobre Mercado de Valores de Venezuela: Mutuos, crédito, liquidez y desarrollo, IESA (2010).
30. - "Rol, importancia, avances, y retos del Mercado de Valores y los intermediarios financieros en Venezuela" en el Foro Ahorro e Inversión: Perspectivas del Mercado de Valores en Venezuela, FACES, UCV (2010).
31. - "Venezuela: Mercado de valores, intermediarios financieros y coyuntura macroeconómica". Fedecamaras (2010).
32. - "Ensayo sobre las asimetrías del sistema monetario internacional". FACES, UCV (2009).
33. - "Venezuela en 2010: Más estanflación, desempleo y especulación financiera". Información utilizada para el Foro de Perspectivas Económicas de Econoinvest 2010 (2009).
34. - "An Integrated Approach to the study of Reserve Earning Economies". University of Siena, Il Refugio (2008).
35. - "Central Banking from theory to practice: An international comparison". University of Siena, Pontignano (2007).
36. "La Banca Central de la Teoría a la Práctica: Una Comparación Internacional". FACES, UCV (2007).
37. - "Banking and the Endogenous Money Supply as viewed from a Post Keynesian perspective". University of Siena, Pontignano (2006).
38. - "A Post Keynesian review on the theory of Banking and the Endogenous Money Supply". University of Siena, Department of Economics (2006).
39. - "La vulnerabilidad de las finanzas públicas en Venezuela" Cycle of Seminars Venezuela Visión Plural. Una mirada desde el CENDES (2004).
40. - "Bimonetarism and Financial Dollarisation" Presentation of the Research Program of the Area of Economics Development, CENDES (2004).

Publicaciones académicas

1. "La política monetaria de los países miembros de la OPEP". Revista Nueva Economía/Nro. 31, Academia de Ciencias Económicas, XVIII, julio 2010.
2. - "International Monetary Asymmetries and the Central Bank". Journal of Post Keynesian Economics / Spring 2010, Vol. 32, Issue 3, p467-496.
3. - "Asimetrías monetarias internacionales y Banca Central" (with Luís Mata Mollejas and Edward J. Nell). Revista Investigación Económica / Vol. LXVII / Nro. 265, Facultad de Economía, Universidad Nacional Autónoma de México, Jul-Sep 2008.
4. - "The Post Keynesian theory of Banking and the Endogenous Money Supply". Revista Venezolana de Análisis de Coyuntura / Vol. XIII / Nro. 1, FACES, UCV, Jan-Jun 2007.
5. - "La integración financiera latinoamericana a la luz de la experiencia europea" (con Sary Levy). Revista BCV (Banco Central de Venezuela), Vol. XXI, N° 1, Caracas, pp. 109-142, Jan-Jun 2007.
6. - "Technology Needs and Power as means of Distribution and Justice". Revista Venezolana de Análisis de Coyuntura / Vol. XII / Nro. 2, FACES, UCV, Jul-Dec 2006.
7. - "La vulnerabilidad de las finanzas públicas en Venezuela" in Venezuela Visión Plural. Una mirada desde el CENDES. Estado y Políticas Públicas. Tomo I (2006).
8. - "El Depredador Fiscal" (con Luis Mata) in Venezuela Macrodinámica y Política. Editorial Trópykos. CEAP, UCV, Caracas (2006).
9. - "Partial Dollarization: A currency-matching rule and its implications for monetary policy and welfare". Revista Venezolana de Análisis de Coyuntura / Vol. X / Nro. 1, pp. 201-250, FACES, UCV, Jan-Jun 2004.
10. - "Implicaciones del contexto inflacionario sobre la inversión en el sector manufacturero venezolano" (with Shakyra Plaza). *Revista Venezolana de Análisis de Coyuntura* / Vol. VI / Nro. 2, pp. 281-308, FACES, UCV, Jul-Dec 2000.

Artículos de opinión (más de 350)

- EL UNIVERSAL, Caracas, Venezuela, desde 2009
- http://runrun.es/, Caracas, Venezuela, desde 2011
- https://www.econometrica.com.ve/, Caracas, Venezuela, desde 2009.

Conferencias a Empresas

- Alrededor de 40 al año desde la fundación de Econométrica (2009).

Premios y Becas

- Beca de la Universidad de Siena, Doctorado en Economía, Italia.

- Beca de la Comisión de Desarrollo Científico y Humanístico(CDCH) de la Universidad Central de Venezuela para el programa de Doctorado en Economía en la Universidad de Siena, Italia, y el período de Visting Académico en el New School for Social Research, NY, EE. UU.

- Beca de la Universidad de Siena, Programa de Maestría en Economía, Italia.

- Beca del British Council para el programa de Maestría en Economía y Finanzas en la Universidad de Warwick, Inglaterra.

- Beca de la Universidad de Warwick para el Programa de Maestría en Economía y Finanzas de la Universidad de Warwick, Inglaterra.

- Beca de Fundayacucho para el programa de Maestría en Economía y Finanzas en la Universidad de Warwick, Inglaterra.

Asesoría económica

- Asesor de Cámaras y Embajadas.
- Fedecámaras.
- Venamcham.
- British Council, (entre otros).

Idiomas

Inglés (bilingüe, nivel de negocios), italiano (conversación).

ANGEL GARCÍA BANCHS AND LUIS MATA MOLLEJAS

International monetary asymmetries and the central bank

Abstract: *In this paper, we argue that the current international monetary system is fully asymmetric, as it divides the world among reserve issuing economies (RIEs) and reserve earning economies (REEs). Thus, monetary theory, we argue, should take into account whether or not the central bank issues an international reserve currency, as that would largely determine its balance sheet structure, interest rate–targeting procedure, and the elasticity of monetary policy and of the exchange rate regime. The reason is plain: as opposed to RIEs, the central bank in REEs must target a minimum stock of foreign currency assets, as the local currency does not circulate abroad.*

Key words: *central banks, international monetary asymmetries.*

The fact that all national states are able to circulate domestically their own currencies due to their capacity to collect taxes (Keynes, 1930; Knapp, 1905; Lerner, 1943; Wray, 2004) contrasts with the fact that not all of them are in the position to do so internationally. Based on this reasoning, and our findings regarding the strikingly different balance sheet structures of 15 central banks from North America, South America, Europe, and Asia, we argue that the current international monetary system is fully asymmetric, as it divides the world among a few reserve issuing economies (RIEs) and a larger group of reserve earning economies (REEs).

Further, we explain why the presence of such asymmetries is so relevant to monetary theory and policy, how different monetary practices can be observed, and finally, which economies tend to follow similar patterns

Angel García Banchs is a visiting scholar at the NSSR, New School University, New York City, and a professor at the Central University of Venezuela (UCV). Luis Mata Mollejas is a professor and coordinator of the Ph.D. Program in Economics at UCV, and a member of the Venezuelan National Academy of Economics. The authors thank Edward J. Nell, Ernesto Screpanti, and an anonymous referee for invaluable comments on earlier versions of this paper, as well as the University of Siena and the Central University of Venezuela for providing the financial support. The usual disclaimer applies.

0160–3477/2010 $9.50 + 0.00.
DOI 10.2753/PKE0160-3477320309

(or stereotypes), which we define in order to classify the behavior of central banks.

Recent developments in Post Keynesian theory

In view of the increasing interest in the new consensus approach to macroeconomics (see Fontana, 2007; Rochon and Setterfield, 2007; Weber, 2006; and Woodford, 2003, for a summary of the new consensus framework), the focus of the Post Keynesian debate has recently shifted toward proposing an interest rate operating procedure alternative to the Taylor rule (for a detailed criticism of the new consensus, see Arestis and Sawyer, 2008; Davidson, 2006; Lavoie, 2006; Monvoisin and Rochon, 2006; Rochon and Setterfield, 2007; Seccareccia, 1998; and Setterfield, 2004; for a summary of the Post Keynesian endogenous money approach, see Arestis, 1992; Davidson, 1972; Fontana, 2006; Fullwiler, 2006; Kaldor, 1982; Lavoie, 1992; Minsky, 1957; Moore, 1988; Nell, 1998; Rochon, 2001; Screpanti, 1997; Wray, 2004; among many others).[1]

In particular, the recent theoretical discussion among Post Keynesians is mainly concerned with how effective monetary policy is to stabilize the economy, the effects of monetary policy upon income distribution, and most important, how and at what level must the rate of interest be set.

For instance, Fontana and Palacio-Vera (2006), Moore (1988), and Palley (2006) argue in favor of an activist approach to interest rate targeting as a tool to stabilize the economy, whereas Gnos and Rochon (2007), Lavoie and Seccareccia (1999), Mosler and Forstater (2004), Smithin (2004), and Wray (2007) argue in favor of adopting long-run interest rate parking-it rules and abandoning short-run interest rate reaction functions (Rochon and Setterfield, 2007). Based on Smithin's (1994) rejection of the notion of the natural rate (e.g., Wicksell's natural rate), this second approach proposes fiscal policies and incomes policies to stabilize aggregate demand and inflation, instead of interest rate reaction functions which not only rely on causing unemployment to stabilize the economy but also perturb income distribution among net creditors and debtors.

Three suggestions have so far been put forward: (1) the Smithin rule, which implies setting the real rate of interest equal to zero; (2) the Kansas City rule advocated by Mosler and Forstater (2004) and Wray (2007), which entails setting instead the nominal rate of interest equal to zero—resulting, most likely, in a negative real rate; and (3) Pasinetti's fair rate

[1] See also the old contributions of Keynes (1930; 1936), Robertson (1948), and Wicksell (1934),

rule, defended by Gnos and Rochon (2007) and Lavoie and Seccareccia (1999), which implies setting the real rate equal to the rate of growth of labor productivity.

Note, however, that the above Post Keynesian analysis is not concerned with the complexities that characterize the open economy. Here, we take up the challenge of investigating such complexities and argue that the design of monetary policy largely depends on whether or not the central bank issues an international reserve currency. The next section explains why, and introduces the notion of REEs and RIEs.

Monetary asymmetries and the endogenous theory of money

New concepts for a new environment

First, we define a *reserve earning economy* as one whose transactions with the rest of the world are all settled through the use of a foreign currency, for the local currency (in case of existing one) is nowhere considered an international means of settlement (e.g., all economies except for the United States, the European Union, Japan, and the United Kingdom). In this case, the authorities exhibit a high degree of concern with the accumulation of foreign currency reserves (quantity effect) and the determination of the exchange rate (price effect).

These economies, characterized by a large foreign currency liquidity preference, must accumulate foreign reserves not only to guarantee their means of international payment but also to influence the exchange rate. This is not only because they must face the uncertainty caused by the unavailability of reliable international overdraft credit facilities but also because the price mechanism may not deliver the best possible outcome.

For instance, under a flexible exchange rate regime, it may lead to an appreciating currency and deflation in the presence of large foreign currency inflows and conditions of exports dependence (e.g., if the Marshall–Lerner condition holds); and, the opposite, it may lead to a depreciating currency and inflation in the presence of large foreign currency outflows and conditions of imports dependence (e.g., if the Marshall–Lerner condition does not hold). There are many other reasons such as currency mismatches and balance sheet problems. But what matters is that, in general, REEs are concerned with the accumulation of foreign currency reserves and the determination of the exchange rate.

Moreover, in the case in which foreign reserves are large and the economy faces net foreign currency inflows, the costs of accumulating

foreign reserves in terms of interest payments, sterilization, and reserve allocation are usually inferior to its benefits in terms of welfare and economic growth. This is because, in such a case, the authorities can always sterilize their interventions by increasing their reserve requirement rates and government deposits at the central bank, while reducing the need for new issues of treasury and central bank bills. In other words, REEs are able to resist currency appreciations indefinitely, but they are only in the position to resist depreciations inasmuch as they hold sufficient foreign currency assets, and some minimum stock flow norm of foreign reserve holdings has not yet been reached (e.g., imports/foreign reserves).

Second, we define a *first-order reserve issuing economy* (RIE-1°) as that unique economy whose transactions with the rest of the world are all settled through the use of its own currency, referred to hereafter as *the dominant reserve currency* (e.g., the United States). Here, the degree of concern with the accumulation of foreign currency reserves is null and, hence, no balance-of-payments restrictions in the monetary sense apply.

Third, we define a *second-order reserve issuing economy* (RIE-2°) as one whose transactions within a region of influence are all settled through the use of the domestic currency, but whose transactions elsewhere are usually settled through the use of *the dominant reserve currency.* Given their small volume of extra-regional trade, RIEs-2° need not hold large stocks of foreign currency assets and, hence, behave quite similar to (and usually get confused with) the RIE-1°. The unique example nowadays is the European Union.

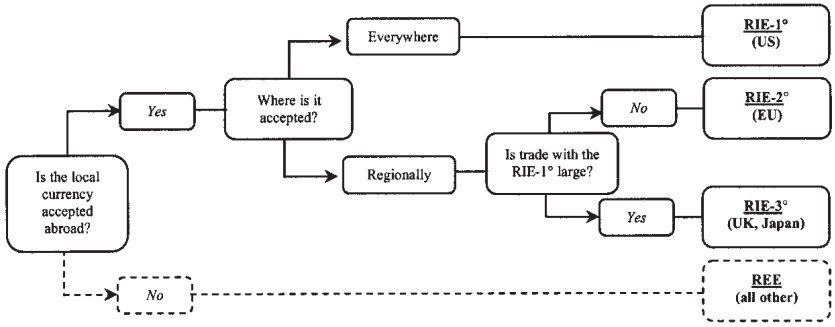
Finally, we define a *third-order reserve issuing economy* (RIE-3°) as that which, apart from being able to circulate its currency regionally, is also distinguished by its large volume of trade with the *first-order reserve issuing economy* (see Figure 1). There are two examples nowadays—Japan and the United Kingdom. Notice, the need for a larger stock of foreign currency assets in RIEs-3° implies they must hold larger reserves than RIEs-2°.

In short, from the highest to the lowest degree of concern for foreign currency accumulation, REEs rank first, followed by RIEs-3° and then by RIEs-2°. For simplicity, however, we refer only to RIEs and REEs.

Monetary asymmetries and the endogenous view

To a lesser or greater degree, the stability of the exchange rate, foreign capital flows, and net payments to the rest of the world represent a concern for both reserve issuing and reserve earning central banks. Thus,

Figure 1 Definitions: reserve earning economies and first, second, and third-order reserve issuing economies



interest rate–targeting policies in both economies must take into account the impact on these variables.

Nevertheless, international monetary asymmetries imply that (1) reserve earning central banks must accumulate a minimum stock of foreign currency reserves (asset side), and sterilize or compensate (endogenously) such accumulation through an increase in central bank securities, bank reserve requirements, and government deposits held at the central bank (liability side); (2) they must target interest rates to reach the minimum level of reserves, influencing indirectly capital flows and the expansion of domestic credit; and (3) once the minimum has been reached, they must decide whether in the future they want to limit the influence of interest rate changes upon the exchange rate by compensating for changes in foreign currency flows with fluctuations in foreign reserves.

Put differently, the other side of the coin of having to accumulate foreign reserves is counting on a policy instrument to influence directly the exchange rate. This is not the case of RIEs, where exchange rates can only be influenced indirectly through changes in interest rates. In REEs, as long as foreign reserves can vary sufficiently, an interest rate reduction (increase) leading to foreign currency outflows (inflows) may be compensated with a decrease (increase) in foreign reserves, limiting the impact on the exchange rate. This, along with the bias against appreciations, and the relatively small sterilization costs, explains why REEs are often willing to accumulate large stocks of foreign reserves.

The reason the authorities of RIEs cannot influence foreign exchange rates directly (but only indirectly through interest rate changes) is that they are not required to accumulate foreign currency assets in the first

place, as the external imbalances of those economies are financed through the expansion of domestic credit, and funded through counterpart local currency liabilities such as deposits, certificates of deposit, bills, securities, and the like.[2]

In other words, while the causality between the current, financial, and monetary accounts of the balance of payments is tridirectional in REEs, it is essentially unidirectional in RIEs, or more precisely in the RIE-1° (e.g., the United States), where the current account causes the financial account and not the opposite, as the local currency is an international reserve.

International monetary asymmetries thus imply two effects. The first is a *quantity effect* which arises from the fact that REEs must target a minimum stock of foreign reserves, namely because their own currencies do not circulate abroad. This effect, which is not market determined but policy determined, establishes a link between the short-term rate and the minimum target level of foreign reserves.

Particularly, the authorities may increase the interest rate to indirectly limit the expansion of domestic credit and induce capital inflows when the level of reserves is below the minimum target; and, the opposite, they may reduce it after such a minimum has been reached.

The second is the *price effect,* and derives from the fact that in REEs, central banks must deal with two forms of monetary reserves—local currency-base money reserves and foreign currency reserves. The price of the former is the interest rate and that of the latter is the exchange rate.

This effect implies that in REEs, the link between the exchange rate and the short-term interest rate depends largely on the availability of foreign reserves—for example, interest rate reductions (increases) impact the exchange rate when foreign reserves cannot/do not decrease (increase) as much as foreign currency outflows (inflows). That is, the link between the interest rate and the foreign exchange rate in REEs weakens as the stock of foreign reserves becomes larger (or is allowed to fluctuate more). The reason is that the larger the stock (or actually, the more it can fluctuate), the more the impact of interest rates on foreign currency flows can be compensated with fluctuations in the stock. This link, rather than demand determined, is policy determined because it is

[2] Instead, in REEs, net outflows of foreign currency, expectations of a fall in the stock of foreign reserves or an expected depreciation tend to lead to a loss of flexibility characterized by the setting of an interest rate above the level the central bank would set under different external conditions. This occurs when the stability of the foreign exchange rate and the level of foreign reserves are a concern for the central bank, as is the case of REEs.

the central bank not the market that is responsible for connecting and disconnecting the two prices.

The point is that at the time of fixing the short-term rate, the authorities of REEs must take into account the size of their stock of foreign reserves, as well as the expected fluctuation in foreign currency flows. Thus, the interest rate–exchange rate connection in REEs differs from that observed in RIEs in that the latter do not count on foreign reserves to limit the impact of capital flows on the exchange rate.

The international monetary system is asymmetric because RIEs do not need to preserve a minimum stock of foreign currency assets, implying their central banks can accommodate the demand for local currency reserves in the most elastic possible way. That is, reserve issuing central banks do not need to adjust interest rates to accumulate reserves, although they certainly need to take into account the impact on capital flows and exchange rate fluctuations when setting the short-term rate.

The latter is because the base money and private bank money of RIEs circulate abroad, implying the exchange rates between reserve currencies and the currencies of REEs are largely determined by the accumulation of foreign reserves on the part of the latter. This explains why often interest changes may not be sufficient to influence the foreign exchange rates between a reserve currency and the currencies of REEs and, hence, why RIEs must resort to political pressure to increase their influence upon them (e.g., the yuan/dollar exchange rate). Finally, notice that this is not the case of the exchange rates between reserve currencies (e.g., the dollar/euro rate), which instead are mostly endogenously determined by markets.

The above postulates regarding both RIEs and REEs are completely consistent with the endogenous theory of money, as in both economies, it is the central bank, not the market, that determines the short-term rate. Modern monetary theory must take into account, though, the role of *international monetary asymmetries,* as whether or not a country issues an international reserve currency affects the balance structure of central banks, the flexibility of the exchange rate regime, and the management of the short-term rate.

Our definition of *international monetary asymmetries* is complementary to *Thirlwall's law* (Thirlwall, 1979). Both notions are concerned with economic growth sustainability, although in that respect the latter is much more precise. Thirlwall's law tells us that international payments imbalances can have relevant implications for economic growth, but its focus is on the goods market (i.e., the real sphere), whereas ours is on the money market (i.e., the financial sphere). Hence, whether or not money is a real commodity in fixed supply is immaterial to Thirlwall's law.

But for our argument, the presence of international reserve currencies in elastic supply is fundamental. In this respect, our approach can explain certain phenomena that cannot be explained by Thirlwall's law, for instance, why only REEs must be concerned with the accumulation of foreign currency assets, and, hence, why monetary and fiscal policies depend on whether or not the economy issues an international reserve currency. In short, our notion explains why Thirlwall's law is mainly applicable to the case of REEs, as RIEs can always expand their supply of local currency in the face of payments imbalances with the rest of the world; put differently, why RIEs may experience credit crises but not currency crises, in the sense that there is always (at least) one exchange rate at which their currencies are accepted abroad. These differences are reflected in Figure 2.

Central bank balance sheets

Here, we argue that the structure of assets and liabilities of a central bank conveys lots of information. It reflects the asymmetries of the international monetary system, the structure and institutional framework of the domestic economy, and the exchange rate regime in place. But it also reflects the monetary policy decisions of central banks, the degree of injection and extraction of exogenous monetary components, and so forth.

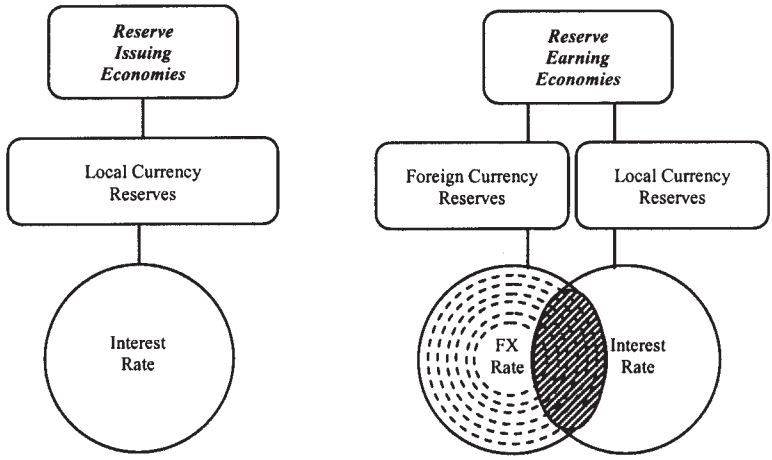
Central bank assets and liabilities

Table 1 proposes a simple classification of a central bank balance sheet. On one hand, an increase (decrease) in most asset components is recorded as an operation of injection (extraction) of *Base Money.*[3] On the other hand, the liability side reflects multiple operations; above all, it records variations in *Cash* and *Bank Reserves* as part of *Base Money,* although it also registers all operations that drain liquidity—that is, all extracting liability components, as well as all operations that affect the equity *Capital* of the central bank.

The extracting liability components are own *Debt Securities* issued by the central bank, *Government Deposits,* and (exogenous) adjustments of the rate of reserve requirements. The use of *Debt Securities* carries on a loss of seignorage, for it implies that the central bank must pay an interest

[3] For instance, the direct effect of an increase in the *Gross International Reserves* component is an equal increase in *Base Money,* which results from an increase either in the *Cash* subcomponent or the *Bank Reserves* subcomponent. The same occurs as a result of an increase in *Domestic Credit*—either through *Credit to the Government* or through *Credit to the Financial Sector.*

Figure 2 International monetary asymmetries and the link between the foreign exchange rate and the short-term interest rate



Notes: The shaded area represents the intersection of two spheres within the money market of REEs. It exists due to the coexistence of two forms of monetary reserves, although the size of the intersection depends on the structure of the domestic economy and, hence, on the intensity of the price effect (e.g., the trade-to-GDP ratio, the presence of currency mismatches, etc.). The smaller the central bank stock of foreign currency assets, the more flexible the exchange rate regime becomes, and, hence, the smaller is the shaded area. On the other hand, the larger is the shaded area, the larger the degree of control over the exchange rate, and the weaker is the link between the interest rate and the exchange rate. Foreign reserves thus act as a buffer stock compensating for the impact of interest rate changes upon foreign currency flows and, hence, upon the exchange rate.

rate in order to drain liquidity from the system; an exogenous increase in the rate of reserve requirements, however, implies that the central bank is using its coercive power in order to force a liquidity drain. Finally, *Government Deposits* within the central bank are also a mechanism to drain liquidity from commercial banks through tax collections and the placement of Treasury securities.

Table 2 summarizes the set of control variables for the central bank. First, under a flexible exchange rate regime, the central bank's stock of *Gross International Reserves* (GIR) is under the control of the monetary authority, precisely because it is relatively smaller than in the case of a fixed exchange rate regime, implying in the former case that the central bank need not accommodate the demand for foreign currency assets. Regardless of the foreign exchange rate regime, *International Reserve*

Table 1
Central banks' balance sheet

Assets, liabilities, and capital
Assets
Gross international reserves (GIR)
Gold and gold certificates
Foreign currency assets
Other international reserve assets
Domestic credit (DC = CG + CFS)
Credit to government (CG)
Credit to financial systems (CFS)
IMF (and other resources from other funds)
Subtotal other assets
Other assets in foreign currency not GIR
Other assets
Total assets
Liabilities
International reserve liabilities (IRL)
IMF and resources from other funds or bank reserves in foreign currency
Base money (BM = CASH + BRES)
Notes and coins in circulation (CASH)
Deposits from banking institutions (BRES)
Debt securities (DS)
Deposits public administration (GD)
Other liabilities
Total liabilities
Capital
Capital (K)

Liabilities (IRL) can only be controlled in the medium to long run, and *Domestic Credit* (DC) and *Base Money* (BM) are endogenously determined.

Further, the stock of *Debt Securities* (DS) is always under the control of the central bank, as the latter can always inject reserves through the asset side by purchasing T-Securities from banks and extract them back through the liability side, paying an interest rate above the one paid by the Treasury. Finally, the equity *Capital* (K) of the central bank works as a buffer stock, absorbing losses and profits from monetary policy, so that strong declines in *Capital* may be seen as a prelude to currency depreciation aimed at restoring flexibility.

In formal terms, after neglecting the conglomerate of *Other Assets* and *Other Liabilities,* assuming they cancel each other out, the balance of assets and liabilities of a central bank leads to the following identity equation:

Table 2
Central bank control variables

	Flexible exchange rate regime		Fixed exchange rate regime	
Variable	Very short run	Short, medium, and long run	Very short run	Short, medium, and long run
GIR	Exogenous	Exogenous	Endogenous	Endogenous
DC	Exogenous	Endogenous	Exogenous	Endogenous
IRL	Endogenous	Exogenous	Endogenous	Exogenous
BM	Exogenous	Endogenous	Exogenous	Endogenous
DS	Exogenous	Exogenous	Exogenous	Exogenous
GD	Endogenous	Endogenous	Endogenous	Endogenous
K	Endogenous	Endogenous	Endogenous	Endogenous

$$\mathrm{GIR} + \mathrm{DC} = \mathrm{IRL} + \mathrm{BM} + \mathrm{DS} + \mathrm{GD} + \mathrm{K}. \tag{1}$$

From Equation (1), the central bank's *Base Money* can then be expressed as[4]

$$\mathrm{BM} = \left[\left(\mathrm{GIR} - \mathrm{IRL}\right) + \left(\mathrm{DC} - \mathrm{DS} - \mathrm{GD}\right)\right] - \mathrm{K}. \tag{1'}$$

To avoid losses of seignorage (BM = DS), which may lead to pressures on the interest rate, the stock of *Base Money* should be larger than the stock of own *Debt Securities* issued by the central bank—recall that interest bearing securities imply a loss of seignorage.

Thus, the condition BM > DS implies

$$\mathrm{BM} > \left(\mathrm{GIR} - \mathrm{IRL}\right) + \left(\mathrm{DC} - \mathrm{BM} - \mathrm{GD}\right) - \mathrm{K}, \tag{2}$$

or equivalently, after some manipulation,

$$\mathrm{BM} > \frac{1}{2} * \left[\left(\mathrm{GIR} - \mathrm{IRL}\right) + \left(\mathrm{DC} - \mathrm{GD}\right) - \mathrm{K}\right]. \tag{2'}$$

Then, by combining Equations (1′) and (2′), and solving for *DS*, the following expression is obtained:

$$\mathrm{DS} < \frac{1}{2} * \left[\left(\mathrm{GIR} - \mathrm{IRL}\right) + \left(\mathrm{DC} - \mathrm{GD}\right) - \mathrm{K}\right]. \tag{3}$$

[4] Where [(GIR – IRL) + (DC – DS – GD)] refers to the central banks' *Net Stock of Credit* and (GIR – IRL) = NIR refers to *Net International Reserves.*

Equation (3) implies that a minimum degree of flexibility for monetary policy under balancing concerns regarding the stabilization of the interest rate, the exchange rate, and the level of foreign currency reserves requires the following condition to hold:

$$\mathrm{DS} \leq \frac{1}{2} * \left[(\mathrm{GIR} - \mathrm{IRL}) + (\mathrm{DC} - \mathrm{GD}) - \mathrm{K} \right] \leq \mathrm{BM}. \qquad (4)$$

Central bank stereotypes

Table 3 summarizes all possible theoretical stereotypes of central banks in accordance with their balance sheet structure—that is, 1, 2, ..., 6. Case 1 is that of RIEs and the rest are those of REEs. Clearly, the concerns faced by the central bank at the time of setting the short-term rate increase as one goes down the list. The rationale is that as one goes from case 1 to 2, the *quantity effect* becomes significant, as the authorities must target a minimum stock of foreign assets, a complexity not present in case (1). But, additionally, as one goes from case 2 to 6, it is the *price effect* that gains increasing significance. For, depending on the structure of the domestic economy, the central bank will have to pay closer and closer attention to exchange rate fluctuations.[5]

Fundamental findings

Central bank balance sheet data were collected for 48 months of observations during the January 2003–December 2006 period. These data were supplemented with overnight interbank interest rate and foreign exchange rate data, with an average of around 1,045 daily observations during the same period; additional monthly data include inflation rates, international reserves, fiscal data, and so forth (see Appendix Table A1).

The following cases were studied: Argentina, Brazil, Mexico, Peru, the United States, and Venezuela in Latin America and North America; the European Union, the United Kingdom, and Norway in Europe; and China, Japan, Kuwait, India, Saudi Arabia, and the United Arab Emirates in Asia. The empirical contrast is based on identity equations, and

[5] Moreover, under inflexible exchange rate regimes—cases 4 to 6—the degree of concern of the central bank diminishes with foreign currency inflows and increases with foreign currency outflows. This is because under the former situation, the central bank can always print additional *Base Money* pari passu with foreign currency inflows while still being able to control fully the short-term rate. But, in the latter situation, as the foreign currency cannot be printed domestically, the central bank would sooner or later lose control over the short-term rate if it is unwilling to forgo the stability of the exchange rate.

Table 3
Central bank stereotypes

		Diagnosis		Symptoms		
		Concern for foreign currency accumulation	Concern for exchange rate fluctuations			
Case	Is the local currency an international reserve currency?	Quantity effect	Price effect	Monetary policy and foreign exchange rate regime in place	Largest component of asset side	Largest component of liability side
1	Yes	Null	Weak	Fully flexible	Domestic credit	Cash
2	No	Adverse and slightly significant	Weak	Flexible	Domestic credit	Total base money
3	No	Adverse and significant	Intermediate	Flexible/fixed	Domestic credit	Debt securities and government deposits
4	No	Adverse and significant	Intermediate	Flexible/fixed	Gross international reserves	Total base money
5	No	Adverse and extremely significant	Strong	Fixed	Gross international reserves	Debt securities and government deposits
6	No	Adverse and extremely significant	Strong	“Fully” fixed	Gross international reserves	Cash

not on behavioral equations. Thus, the econometric analysis has been discarded, as that would only lead to the presence of R^2 values equal to the unit and the absence of statistical errors.

Rather than providing a detailed study of every individual case—a task out of the scope of this paper—this section presents the general empirical findings. First, the stability of overnight interbank interest rates in the sample (see Appendix Figures A1–A4) suggests that, during the period of study, most central banks tended to accommodate day after day the demand for local currency reserves (i.e., followed interest targeting procedures).[6] Yet the level and volatility of overnight interest rates was lower in RIEs and countries with more stable fixed exchange regimes (e.g., China, United Arab Emirates, and Saudi Arabia).

Regarding balance sheet structures (see Appendix Tables A2 and A3), all RIEs behaved as expected in line with stereotype 1. During the whole period from January 2003 to December 2006, *Domestic Credit* was the largest asset component, with an average of 93 percent, 49 percent, 69 percent, and 94 percent in the case of the United States, the European Union, the United Kingdom, and Japan, respectively. On the liability side, *Cash* was the largest component, reaching up to 92 percent, 55 percent, 49 percent, and 55 percent, respectively.

Notice, however, that while *Bank Reserves* are small in the case of the United States (3 percent), they are relatively large in the case of the European Union (17 percent), the United Kingdom (27 percent), and Japan (21 percent). Moreover, in the latter case, the amount of *Debt Securities* reached up to 17 percent, while in the case of the United States, the European Union, and the United Kingdom the amounts were insignificant.

Yet the overall results confirm that reserve-issuing central banks, such as the FED and the European Central Bank (ECB) and to a lesser extent the Bank of England and the Bank of Japan, need not, in general, be concerned with the accumulation of foreign currency assets. Indeed, foreign currency assets, which form part of all *Gross International Reserve* assets, represented 0 percent, 16 percent, 15 percent, and 4 percent, respectively.[7]

[6] The exception to the rule was the case of Venezuela, which exhibited (for every single year) the greatest interest rate volatility among all economies in the whole sample. Indeed, the country's average daily interest rate volatility during 2003 was around 12 percent, suggesting that the Central Bank of Venezuela is the only central bank in the whole sample that pretends to follow a policy based on monetary targeting.

[7] One should bear in mind, though, that in Japan, the United Kingdom, and the United States (and also at the national level within the European Union), treasury de-

Regarding REEs, the findings (as expected) are divided among those central banks that behaved as stereotype 4 and those that behaved as stereotype 5. The first group was composed of Argentina, China, India, Kuwait, Mexico, and Peru, and the second by almost all of the oil-exporting countries in the sample: Norway, United Arab Emirates, Saudi Arabia, and Venezuela. The largest asset component for both groups was, again as expected, the *Gross International Reserves* component, reaching, respectively, 61 percent, 56 percent, 86 percent, 98 percent, 74 percent, 89 percent, 95 percent, 92 percent, 98 percent, and 78 percent in the case of Argentina, China, India, Kuwait, Mexico, Peru, Norway, Saudi Arabia, United Arab Emirates, and Venezuela.[8]

Yet, in accordance with Table 3, the liability structure varied across groups. For instance, while *Base Money* was the largest liability component for the first group, the sum of *Government Deposits* and *Debt Securities* was the largest for the second. Indeed, for the first group, total *Base Money* reached up to 39 percent, 66 percent, 71 percent, 54 percent, 52 percent, and 70 percent in the case of Argentina, China, India, Kuwait, Mexico, and Peru, respectively, while for the second group, the sum of *Government Deposits* and *Debt Securities* represented 89 percent, 32 percent, 42 percent, and 42 percent in the case of Norway, Saudi Arabia, United Arab Emirates, and Venezuela, respectively.[9]

partments build a separate and usually larger stock of foreign currency assets than that built by their respective central banks (including the ECB). Indeed, the 2006 average of total U.S. reserve assets held by both the Treasury and the Federal Reserve Banks of the United States reached up to $66 billion, out of which only 14 were held by the latter. Equivalently, in the case of Japan, total reserve assets held by both the Ministry of Finance and the Bank of Japan reached up to $870 billion, out of which only 48 were held by the latter. And in the case of the United Kingdom, out of a total of $79 billion, only 30 were held by the Bank of England.

[8] In the case of Argentina, it is clear that the relevant value should correspond to the sum of *Gross International Reserves* (39 percent) and the *IMF* components (22 percent), as the latter represent as well foreign currency reserve assets that are recorded separately. This is confirmed by the evolution of the data, showed in Appendix Table A3, which reflects the increase in *Gross International Reserves* from 30 percent in 2003 to 50 percent in 2006. Yet the average of this last figure during the whole period was 39 percent.

Equivalently, in the case of Norway, the relevant value should correspond to the sum of *Gross International Reserves* (20 percent) and the value of the assets accumulated under the *Oil Fund* (75 percent), as the latter represents as well foreign currency reserve assets that, not being monetized, are recorded separately.

[9] For Peru, the relevant value is the sum of *Base Money* (25 percent) and *Bank Reserves in Foreign Currency* (45 percent). This is because the Peruvian economy is financially dollarized, implying a large component of *Base Money* is represented by foreign currency bank reserves that here are registered separately.

The case of Brazil represents an unexpected result, for the balance sheet structure of its central bank exhibits *Domestic Credit* as the largest asset component (65 percent) and the sum of *Government Deposits* and *Debt Securities* (53 percent) as the largest liability component. This may reflect a small price effect or a relatively low degree of concern with foreign exchange fluctuations (e.g., due to a low ratio of trade to gross domestic product [GDP]), but this leaves unexplained the basis for such large government deposits.

The results show strong evidence of high elasticity in the case of the monetary systems of RIEs and low flexibility in the case of reserve earning systems. Further, the data suggest that balance sheet structures are basically steady over the business cycle, in the sense that no economy can jump from one extreme position to the other. That is, no reserve earning central bank—stereotypes 2 to 6—can suddenly behave as a reserve issuing one—stereotype 1. Yet portfolio adjustments and exchange rate adjustments within a particular stereotype affect the flexibility of the monetary system in the short run.

Conclusions

Based on our findings of strikingly different central bank balance sheet structures worldwide, we argued that the current international monetary system is fully asymmetric, as it divides the world among a few RIEs and a larger group of REEs. Further, we argued that international monetary asymmetries are relevant to monetary theory and policy because they affect the behavior of central banks, their balance sheet structure,

---

With regard to Norway, this is after considering the liability counterpart of the assets held in the Norwegian Oil Fund as a form of *Government Deposit.*

In the case of Saudi Arabia, 44 percent of total liabilities during the period were composed of "Other Miscellaneous Liabilities." It would be interesting to know their composition, but no report from the Web site of the Saudi Arabian Monetary Agency (SAMA) mentions anything with respect to it; and by the time of writing, no department of the bank replied to our inquiries regarding this matter. One thing is for sure, though, such a concept must include the *Equity Capital* and what SAMA calls elsewhere "reverse repos" or, in our terminology, *Debt Securities.* So, it is very likely that the sum of the extracting liability components—*Debt Securities* and *Government Deposits*—exceeds 32 percent in the case of SAMA. For instance, if one assumes that half of the 44 percent mentioned above were *Debt Securities,* then the sum of the extracting components would be 54 percent rather than 32 percent and, hence, would represent the second greatest effort of extraction (sterilization) in the whole sample. Such a number is certainly consistent with the riyal peg against the U.S. dollar in place since May 1981.

the flexibility of the exchange rate regime, and the design of interest rate–targeting rules.

Both RIEs and REEs must be concerned with the exchange rate, foreign capital flows, and net payments to the rest of the world, but only REEs must be concerned with the accumulation of foreign currency assets, as their local currencies do not circulate abroad. International monetary asymmetries cause two effects. The first implies that in REEs, there is a strong policy-induced connection between the quantity of foreign reserve assets and the short-term rate of interest, as the fact that reserve earning central banks must target a minimum stock of foreign currency assets affects interest rate targeting.

The second effect derives from the first. That is, from the fact that in REEs, two forms of monetary reserves coexist: local currency base money reserves, which are elastic, and foreign currency reserves, which are not. The price of the former is the interest rate and that of the latter is the exchange rate. This effect means that in REEs, the connection between the foreign exchange rate and the short-term rate weakens as foreign currency reserves increase. This is because the larger such a stock is, the greater the capacity of the central bank to limit the impact of interest rate changes upon the exchange rate.

For instance, as long as foreign reserves can vary sufficiently, an interest rate reduction (increase) that leads to foreign currency outflows (inflows) may be compensated by an equivalent reduction (increase) in the stock of foreign reserves, limiting the impact on the exchange rate. This, along with the authorities' bias against currency appreciations, explains why REEs are often willing to accumulate large stocks of foreign reserves, provided (as it is the case) sterilization costs are relatively small.

RIEs need not accumulate or target a minimum stock of foreign currency reserves, as their local currencies circulate abroad. Further, notice this implies their exchange rates against the currencies of REEs largely depend on the accumulation of foreign reserves on the part of the latter (e.g., the yuan/dollar exchange rate).

Moreover, here it is argued that the dominant reserve issuing central bank (e.g., the Fed) cannot engineer a depreciation of its currency against the currencies of REEs through a reduction in its short-term rate because it does not hold sufficiently large foreign reserves (e.g., yuans) so as to impose a target price; rather, such an adjustment requires international coordination (or political pressure). But, notice, this is not the case of exchange rates between reserve currencies (e.g., the dollar/euro rate), which instead are largely determined by market forces and interest rate differentials.

Further, we argued that the differences among monetary practices are captured by the diverse structures of central bank assets and liabilities, and showed that RIEs and REEs follow entirely different patterns or stereotypes. For instance, while the former behave as stereotype 1 proposed in the fourth section, with *Domestic Credit* and *Cash* as the largest asset and liability components, the latter always behave as stereotype 4, with, respectively, *Gross International Reserves* and *Base Money* as the largest components. The exception to the rule is that of some oil-exporting countries that, due to their fixed exchange rate regimes (and sterilization needs), behave as stereotype 5. Yet, in general, one would expect stereotypes 1 and 4 to be the rule, respectively, for RIEs and REEs.

Moreover, it was shown that the efforts to stabilize the exchange rate in REEs lead to a substitution (sterilization or compensation) process whereby *Cash* is partially replaced with *Debt Securities, Government Deposits,* and larger *Bank Reserve* requirements.[10] Thus, one corollary of our analysis is that to distinguish whether or not a central bank makes an effort to stabilize the currency, one should focus on the structure of its balance sheet rather than on the evolution of the foreign exchange rate.

Finally, the results also suggest the presence of "sounder" monetary practices in REEs than in RIEs. But this, rather than being a merit, reflects a lower degree of monetary elasticity in the former case, where guaranteeing a large stock of foreign currency assets is crucial (Garcia et al., 2008).[11]

This explains why monetary policy is much more elastic in RIEs than in REEs. For, apart from targeting short-term interest rates to influence indirectly foreign currency flows and exchange rate fluctuations, reserve earning central banks must intervene directly in foreign exchange markets to accumulate reserves (asset side); hence, they must endogenously compensate such interventions reducing the proportion of cash, and increasing that of their own securities, bank reserves, and government deposits (liability side).

[10] Indeed, REEs are usually guided by criterions of "sound finance," including the preservation of large volumes of local currency *Bank Reserves.*

[11] Thus, apart from the case of Brazil, the results suggest a case for inflexible exchange rate regimes in REEs, a finding contrary to the orthodox principle of *price flexibility.* Moreover, the results also illustrate how two orthodox principles may be in contradiction, for *price flexibility* and policies of *sound finance* cannot coexist simultaneously, as no exchange rate regime can remain flexible under *sound practices* of central banking.

REFERENCES

Arestis, P. *The Post-Keynesian Approach to Economics: An Alternative Analysis of Economic Theory and Policy.* Aldershot, UK: Edward Elgar, 1992.

Arestis, P., and Sawyer, M. "A Critical Reconsideration of the Foundations of Monetary Policy in the New Consensus Macroeconomics Framework." *Cambridge Journal of Economics,* 2008, *32* (5), 761–779

Davidson, Paul. *Money and the Real World.* New York: Halstead Press, 1972.

———. "Can, or Should, a Central Bank Inflation Target?" *Journal of Post Keynesian Economics,* Summer 2006, *28* (4), 689–703.

Fontana, G. "The 'New Consensus' View of Monetary Policy: A New Wicksellian Connection?" Working Paper no. 476, Levy Economics Institute, Annandale-on-Hudson, 2006.

———. "Why Money Matters: Wicksell, Keynes, and the New Consensus View on Monetary Policy." *Journal of Post Keynesian Economics,* Fall 2007, *30* (1), 43–60.

Fontana, G., and Palacio-Vera, A. "Is There an Active Role for Monetary Policy in the Endogenous Money Approach?" In C. Gnos and L.-P. Rochon (eds.), *Post-Keynesian Principles of Economic Policy,* Cheltenham, UK: Edward Elgar, 2006, pp. 49–56.

Fullwiler, S.T. "Setting Interest Rates in the Modern Money Era." *Journal of Post Keynesian Economics,* Spring 2006, *28* (3), 495–525.

Garcia, A.G.; Nell, E.J.; and Mata, L. "Asimetrías monetarias internacionales y Banca Central" [International Monetary Assymetries and the Central Bank]. *Revista Investigación Económica,* 2008, *67* (265), 145–187.

Gnos, C., and Rochon, L.-P. "The New Consensus and Post-Keynesian Interest Rate Policy." *Review of Political Economy,* 2007, *17* (3), 369–386.

Kaldor, N. *The Scourge of Monetarism.* Oxford: Oxford University Press, 1982.

Keynes, J.M. *A Treatise on Money.* London: Macmillan, 1930.

———. *The General Theory of Employment, Interest and Money.* London: Macmillan, 1936.

Knapp, G.F. *Staatliche Theorie des Geldes* [State Theory of Money]. Leipzig: Duncker & Humblot, 1905.

Lavoie, M. *Foundations of Post Keynesian Economic Analysis.* Aldershot, UK: Edward Elgar, 1992.

———. "A Post-Keynesian Amendment to the New Consensus Model on Monetary Policy." *Metroeconomica,* 2006, *57* (2), 165–192.

Lavoie, M., and Seccareccia, M. "Interest Rate: Fair." In P. O'Hara (ed.), *Encyclopedia of Political Economy,* vol. 1. London: Routledge, 1999, pp. 543–545.

Lerner, A.P. "Functional Finance and the Federal Debt." *Social Research,* 1943, *10* (1), 38–51.

Minsky, H.P. "Central Banking and Money Market Changes." *Quarterly Journal of Economics,* May 1957, *71,* 171–187.

Monvoisin, V., and Rochon, L.-P. "The Post-Keynesian Consensus, the New Consensus, and Endogenous Money." In C. Gnos and L.-P. Rochon (eds.), *Post-Keynesian Principles of Economic Policy.* Cheltenham, UK: Edward Elgar, 2006, pp. 57–77.

Moore, B.J. *Horizontalists and Verticalists: The Macroeconomics of Credit–Money.* Cambridge: Cambridge University Press, 1988.

Mosler, W., and Forstater, M. "The Natural Rate of Interest Is Zero." Working Paper no. 37, University of Missouri, Kansas City, 2004.

Nell, E. *The General Theory of Transformational Growth: Keynes After Sraffa.* Cambridge: Cambridge University Press, 1998.

Palley, T.I. "A Post-Keynesian Framework for Monetary Policy: Why Interest Rate Operating Procedures Are Not Enough." In C. Gnos and L.-P. Rochon (eds.), *Post-Keynesian Principles of Economic Policy.* Cheltenham, UK: Edward Elgar, 2006, pp. 78–98.

Robertson, D.H. *Money.* New York: Pitman, 1948. [Originally published in 1922.]

Rochon, L.-P. "Cambridge's Contribution to Endogenous Money: Robinson and Kahn on Credit and Money." *Review of Political Economy,* July 2001, *13* (3), 287–307.

Rochon, L.-P., and Setterfield, M. "Interest Rates, Income Distribution, and Monetary Policy Dominance: Post Keynesians and the 'Fair Rate' of Interest." *Journal of Post Keynesian Economics,* Fall 2007, *30* (1), 13–42.

Screpanti, E. "Banks, Increasing Risk, and the Endogenous Money Supply." *Economic Notes by Banca Monte dei Paschi di Siena,* 1997, *26* (3), 567–588.

Seccareccia, M. "Wicksellian Norm, Central Bank Real Interest Rate Targeting and Macroeconomic Performance." In P. Arestis and M. Sawyer (eds.), *The Political Economy of Central Banking.* Cheltenham, UK: Edward Elgar, 1998, pp. 180–198.

Setterfield, M. "Central Banking, Stability and Macroeconomic Outcomes." In M. Lavoie and M. Seccareccia (eds.), *Central Banking in the Modern World: Alternative Perspectives.* Cheltenham, UK: Edward Elgar, 2004, pp. 35–56.

Smithin, J. *Controversies in Monetary Economics: Ideas, Issues, and Policy.* Aldershot, UK: Edward Elgar, 1994.

———. "Interest Rate Operating Procedures and Income Distribution." In M. Lavoie and M. Seccareccia (eds.), *Central Banking in the Modern World: Alternative Perspectives.* Aldershot, UK: Edward Elgar, 2004, pp. 57–69.

Thirlwall, A.P. "The Balance of Payments Constraint as an Explanation of International Growth Rate Differences." *Banca Nazionale del Lavoro Quarterly Review,* March 1979, *128,* 45–53.

Weber, A. "The Role of Interest Rates in Theory and Practice: How Useful Is the Concept of the Natural Real Rate of Interest for Monetary Policy?" Speech delivered as the Inaugural G.L.S. Shackle Biennial Memorial Lecture, St. Edmund's College, Cambridge, 2006.

Wicksell, K. *Interest and Prices,* London: Macmillan, 1934.

Woodford, M. *Interest and Prices: Foundations of a Theory of Monetary Policy.* Princeton: Princeton University Press, 2003.

Wray, R. "When Are Interest Rates Exogenous?" Center for Full Employment and Price Stability, Working Paper no. 30, University of Missouri, Kansas City, 2004.

———. "A Post Keynesian View of Central Bank Independence, Policy Targets, and the Rules Versus Discretion Debate." *Journal of Post Keynesian Economics,* Fall 2007, *30* (1), 119–141.

Table A1
Description of the data, all countries—January 2003–December 2006

Country	Variable					Observations
	Balance sheet data (48 months from January 2003 to December 2006)	Interest rate data (approximately 1,045 daily observations)	Spot foreign exchange rate data (approximately 1,045 daily observations)	Inflation rate data (48 months from January 2003 to December 2006)	Gross international reserves data (48 months from January 2003 to December 2006)	
Argentina	Source: Central Bank of Argentina	Buenos Aires Interbank offered rate (BAIBOR), overnight annualized Source: Central Bank of Argentina	ARS/1 USD, daily Source: Central Bank of Argentina	Consumer price index (CPI) inflation rate (monthly) 1999 = 100 Source: National Institute of Statistics and Censuses	Taken from balance sheet data: foreign assets divided by the average foreign exchange rate, the latter being computed as the unweighted average of daily rates	None
Brazil	Source: Central Bank of Brazil	Special System of Clearance and Custody (SELIC), overnight annualized Source: Central Bank of Brazil	BRL/1 USD, daily Source: Central Bank of Brazil	CPI inflation rate (monthly) 1993 = 100 Source: Brazilian Institute of Geography and Statistics (IBGE)	Taken from balance sheet data: foreign assets divided by the average foreign exchange rate, the latter being computed as the unweighted average of daily rates	None
Mexico	Source: Bank of Mexico	Money market rate (TIIE), overnight annualized Source: Bank of Mexico	MXN/1 USD, daily Source: Bank of Mexico	CPI inflation rate INPC (monthly) 2002 = 100 Source: Bank of Mexico	Taken from balance sheet data: foreign assets divided by the average foreign exchange rate, the latter being computed as the unweighted average of daily rates	None

(continues)

Table A1
Continued

Country	Balance sheet data (48 months from January 2003 to December 2006)	Interest rate data (approximately 1,045 daily observations)	Spot foreign exchange rate data (approximately 1,045 daily observations)	Inflation rate data (48 months from January 2003 to December 2006)	Gross international reserves data (48 months from January 2003 to December 2006)	Observations
Peru	Source: Central Reserve Bank of Peru. Detailed version provided by the Statistics Department by e-mail.	Interbank offered rate, overnight annualized Source: Central Reserve Bank of Peru	PEN/1 USD, daily Source: Central Reserve Bank of Peru	CPI inflation rate IPC-Lima (monthly) 2001 = 100 Source: Central Reserve Bank of Peru	Taken from balance sheet data: foreign assets divided by the average foreign exchange rate, the latter being computed as the unweighted average of daily rates	Detailed balance sheet data are available on the Web page only on a annual basis. Monthly data were provided on demand. Most of the economy's base money is dollarized in the form of dollar bank reserves.
United States	Source: Board of Governors of the Federal Reserve System	Federal funds rate, overnight annualized Source: Board of Governors of the Federal Reserve System	N/A	CPI inflation rate—all urban consumers (monthly) 1982–84 = 100 Source: U.S. Department of Labor	Taken from balance sheet data: foreign assets divided by the average foreign exchange rate, the latter being computed as the unweighted average of daily rates	None
Venezuela	Source: Central Bank of Venezuela	Interbank offered rate, overnight annualized Source: Central Bank of Venezuela	VEB/1 USD, daily Source: Central Bank of Venezuela	CPI inflation rate IPC–Caracas (monthly) 1997 = 100 Source: Central Bank of Venezuela	Taken from balance sheet data: foreign assets divided by the average foreign exchange rate, the latter being computed as the unweighted average of daily rates	None
United Kingdom	Source: Bank of England	Daily sterling overnight interbank average (SONIA), overnight annualized Source: Bank of England	GBP/1 USD, daily Source: Bank of England	CPI inflation rate (monthly) 2005 = 100 Source: Office for National Statistics	Taken from balance sheet data: foreign assets divided by the average foreign exchange rate, the latter being computed as the unweighted average of daily rates	The separation between the Issuing Department and the Banking Department within the Bank of England required consolidation of balance sheet data.

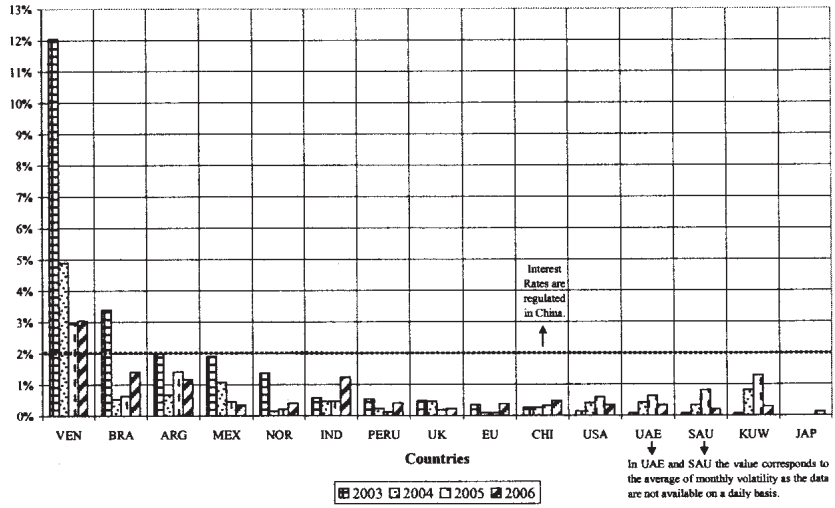
European Union	Source: European Central Bank	Euro overnight index average (EUONIA), overnight annualized Source: European Central Bank	EU/1 USD, daily Source: European Central Bank	Harmonized index of consumer prices (HICP)—overall index (monthly) 2005 = 100 Source: Eurostat	Taken from balance sheet data: foreign assets divided by the average foreign exchange rate, the latter being computed as the unweighted average of daily rates	None
Norway	Source: Central Bank of Norway	Norwegian InterBank Offered Rate (NIBOR-T), overnight annualized Source: Central Bank of Norway	NOK/1 USD, daily Source: Central Bank of Norway	The Norwegian consumer price index (monthly) 1998 = 100 Source: Statistics Norway	Taken from balance sheet data: foreign assets divided by the average foreign exchange rate, the latter being computed as the unweighted average of daily rates	None
China	Source: The People's Bank of China	China Interbank Offer Rate (CHIBOR), overnight annualized Source: Bloomberg (CNIBR1D)	CNY/1 USD, daily Source: Bloomberg (CNY)	CPI inflation rate (monthly) 1996 = 100 Source: National Bureau of Statistics of China and Economist Intelligence Unit	Taken from balance sheet data: foreign assets divided by the average foreign exchange rate, the latter being computed as the unweighted average of daily rates	None
Japan	Source: Bank of Japan	Uncollateralized call rates, overnight annualized Source: Bank of Japan	JPY/1 USD, daily Source: Bank of Japan	CPI inflation rate (monthly) 2005 = 100 Source: Statistics Bureau (Ministry of Internal Affairs and Communications)	Taken from balance sheet data: foreign assets divided by the average foreign exchange rate, the latter being computed as the unweighted average of daily rates	None
Kuwait	Source: Central Bank of Kuwait	Kuwait Inter-Bank Offered Rate (KIBOR1M), one month annualized Source: Bloomberg (KIBOR1M)	KWD/1 USD, daily Source: Bloomberg (KWD)	CPI inflation rate (monthly) 2000 = 100 Source: Economist Intelligence Unit	Taken from balance sheet data: foreign assets divided by the average foreign exchange rate, the latter being computed as the unweighted average of daily rates	None

(continues)

Table A1
Continued

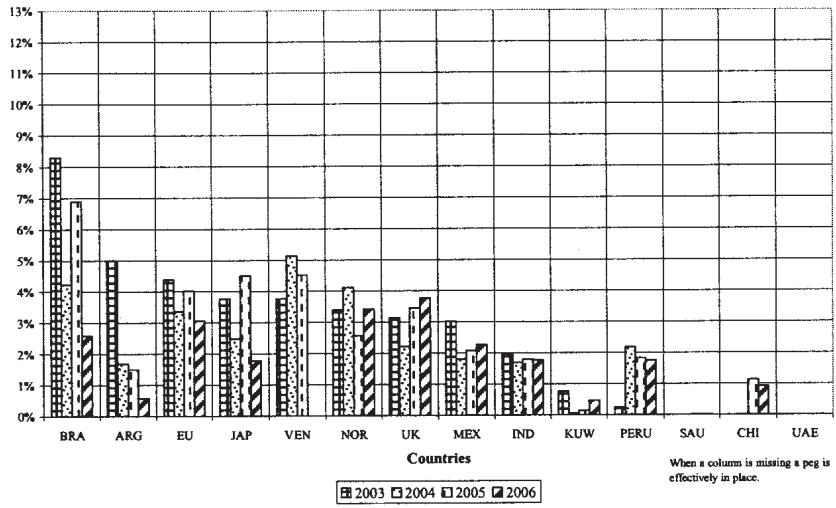
Country	Balance sheet data (48 months from January 2003 to December 2006)	Interest rate data (approximately 1,045 daily observations)	Spot foreign exchange rate data (approximately 1,045 daily observations)	Inflation rate data (48 months from January 2003 to December 2006)	Gross international reserves data (48 months from January 2003 to December 2006)	Observations
India	Source: Reserve Bank of India	Mumbai Interbank Offer Rate (MIBOR), overnight annualized Source: National Stock Exchange of India Ltd.	INR/1 USD, daily Source: Reserve Bank of India	Consumer price index numbers for urban nonmanual (monthly) 1984–85 = 100 Source: Reserve Bank of India	Taken from balance sheet data: foreign assets divided by the average foreign exchange rate, the latter being computed as the unweighted average of daily rates	The "equity capital" of the Reserve Bank of India was not available on the Web page and hence is included under the concept of "Other Liabilities" of the bank's balance sheet.
Saudi Arabia	Source: Saudi Arabian Monetary Agency	Money market rates from January 2003 to February 2006 and from September 2006 to December 2006, overnight annualized Source: Saudi Arabian Monetary Agency (SAMA) and Overnight interbank deposit rate from March 2006 to August 2006, Source: Bloomberg (SRDR1T)	SAR/1 USD, daily Source: Bloomberg (SAR)	Cost of living Saudi Arabia (monthly) 1999 = 100 Source: Central Department of Statistics of Ministry of Economy and Planning	Taken from balance sheet data: foreign assets divided by the average foreign exchange rate, the latter being computed as the unweighted average of daily rates	"Other Liabilities" correspond to "Other Miscellaneous Liabilities" in the original balance sheet. They represent around 40 percent of "Total Liabilities" and include components such as reverse repos, debt securities, and so forth, whose proportion is not published on SAMA's Web page.
United Arab Emirates	Source: Central Bank of United Arab Emirates	Interest rates on interbank deposits, one month annualized Source: Monetary and Banking Developments of the Central Bank of United Arab Emirates	AED/1 USD, daily Source: Bloomberg (AED)	CPI inflation rate (annually) 2000 = 100 Source: IMF	Taken from balance sheet data: foreign assets divided by the average foreign exchange rate, the latter being computed as the unweighted average of daily rates	CPI Index data are not available elsewhere but on the IMF's Web page.

Figure A1 Average daily interest rate volatility in the interbank market, all countries



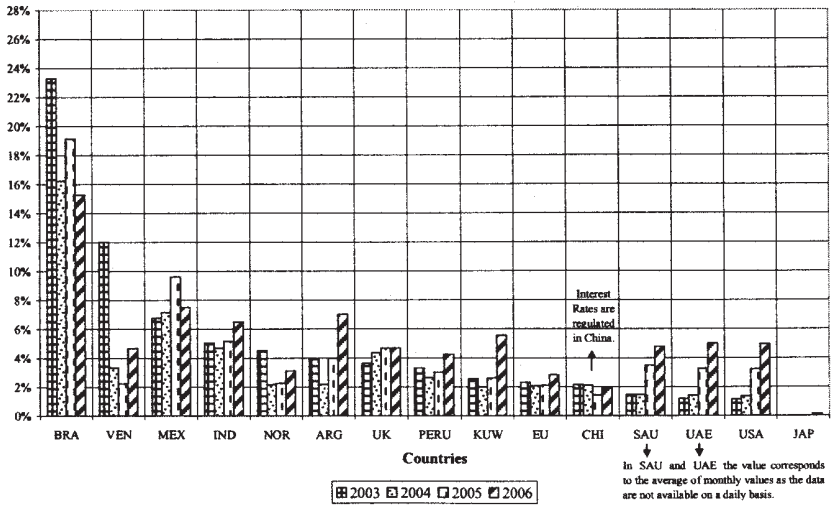
Notes: VEN = Venezuela; BRA = Brazil; ARG = Argentina; MEX = Mexico; IND = India; UK = United Kingdom; EU = European Union; CHI = China; USA = United States; UAE = United Arab Emirates; SAU = Saudi Arabia; KUW = Kuwait; JAP = Japan.

Figure A2 Average foreign exchange rate daily volatility over mean in the interbank market, all countries except the United States



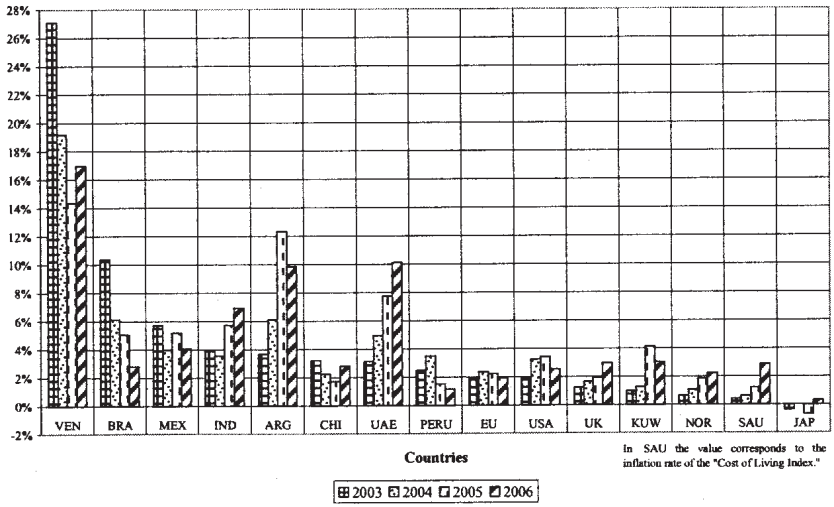
Notes: BRA = Brazil; ARG = Argentina; EU = European Union; JAP = Japan; VEN = Venezuela; NOR = Norway; UK = United Kingdom; MEX = Mexico; IND = India; KUW = Kuwait; SAU = Saudi Arabia; CHI = China; UAE = United Arab Emirates.

Figure A3 Average interest rate in the interbank market, all countries



Notes: BRA = Brazil; VEN = Venezuela; MEX = Mexico; IND = India; NOR = Norway; ARG = Argentina; UK = United Kingdom; KUW = Kuwait; EU = European Union; CHI = China; SAU = Saudi Arabia; UAE = United Arab Emirates; USA = United States; JAP = Japan.

Figure A4 Annualized consumer price index inflation rate, all countries



Notes: VEN = Venezuela; BRA = Brazil; MEX = Mexico; IND = India; ARG = Argentina; CHI = China; UAE = United Arab Emirates; EU = European Union; USA = United States; UK = United Kingdom; KUW = Kuwait; NOR = Norway; SAU = Saudi Arabia; JAP = Japan.

Table A2
Average structure of (central banks') monthly balance sheets, all countries—January 2003–December 2006 (in percent)

Assets, liabilities, and capital	Argentina	Brazil	Mexico	Peru	United States	Venezuela	United Kingdom	European Union
Assets								
Gross international reserves (GIR)	39	32	74	89	2	78	20	34
Gold and gold certificates	1	0	0	4	1	17	0	15
Foreign currency assets	38	32	73	83	0	60	15	16
Other international reserve assets	0	0	1	2	0	2	4	3
Domestic credit (DC = CG + CFS)	29	65	19	1	93	7	69	49
Credit to the government (CG)	17	61	11	0	92	7	22	5
Credit to the financial sector (CFS)	12	4	7	1	0	0	48	45
IMF (and other resources from other funds)	22	0	0	0	0	0	0	0
Subtotal other assets	9	3	7	10	6	16	11	17
Other assets in foreign currency not GRI	4	2	1	7	0	14	0	2
Other assets	6	1	6	3	6	2	11	15
Total assets								
Liabilities								
International reserve liabilities (IRL)	4	7	5	9	0	21	19	2
IMF and resources from other funds or bank reserves in foreign currency	28	10	0	45	0	0	0	0
Base money (BM = CASH + BRES)	39	29	52	25	95	34	76	72
Notes and coins in circulation (CASH)	28	11	30	18	92	14	49	55
Deposits of banking institutions (BRES)	11	18	22	6	3	19	27	17
Debt securities (DS)	17	19	23	13	3	27	1	0
Deposits public administration (GD)	1	34	15	2	1	15	1	7
Other liabilities	10	1	5	6	1	4	3	19
Total liabilities	88	99	103	99	97	77	100	93
Capital								
Capital (K)	12	1	–3	1	3	22	0	7
Central bank stereotype 1, 2, ..., 6	–4	–3	–4	–4	–1	–5	–1	–1

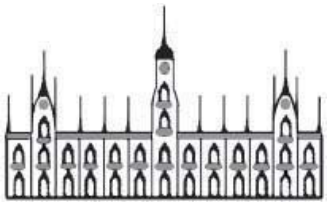
	Norway	China	Japan	Kuwait	India	Saudi Arabia	United Arab Emirates
Assets							
Gross international reserves (GIR)	20	56	4	98	86	92	98
Gold and gold certificates	0	0	0	1	3	0	0
Foreign currency assets	19	56	4	97	83	92	98
Other international reserve assets	0	0	0	0	0	0	0
Domestic credit (DC = CG + CFS)	2	31	94	0	3	0	1
Credit to the government (CG)	1	4	92	0	2	0	0
Credit to the financial sector (CFS)	1	27	2	0	1	0	1
IMF (and other resources from other funds)	75	0	0	0	0	0	0
Subtotal other assets	3	13	2	2	12	8	1
Other assets in foreign currency not GRI	0	1	0	0	0	0	0
Other assets	3	11	2	2	12	8	1
Total assets							
Liabilities							
International reserve liabilities (IRL)	5	1	0	2	0	0	0
IMF and resources from other funds or bank reserves in foreign currency	81	0	0	0	0	0	0
Base money (BM = CASH + BRES)	6	66	76	54	71	24	56
Notes and coins in circulation (CASH)	3	29	55	29	55	18	27
Deposits of banking institutions (BRES)	2	37	21	26	16	6	29
Debt securities (DS)	0	14	17	4	5	0	27
Deposits public administration (GD)	8	14	4	25	1	32	15
Other liabilities	0	5	3	15	23	44	3
Total liabilities	93	100	98	91	100	100	98
Capital							
Capital (K)	7	0	2	9	0	0	2
Central bank stereotype 1, 2, ..., 6	–5	–4	–1	–4	–4	–5	–4

Table A3
The evolution of some key variables from year average 2003 to year average 2006, all countries

Assets, liabilities, and capital	Argentina	Brazil	Mexico	Peru	United States	Venezuela	United Kingdom	European Union
Assets (in percent)								
Gross international reserves (GIR)	30–50	32–32	70–77	87–89	2–2	74–74	19–19	41–29
Domestic credit (DC = CG + CFS)	26–39	64–66	22–19	1–3	92–93	6–14	69–70	42–51
IMF (or Norway's oil fund)	37–0							
Liabilities (in percent)								
IMF (or Peru's foreign currency bank reserves and Norway's oil fund)	46–3	17–0		29–25				
Base money (BM = CASH + BRES)	36–49	24–35	51–54	18–30	95–95	34–36	80–67	68–72
Notes and coins in circulation (CASH)	22–38	8–14	29–30	16–21	92–93	17–13	54–42	51–56
Deposits of banking institutions (BRES)	13–11	16–22	22–24	2–10	3–2	17–23	26–25	18–16
Debt securities (DS)	6–30	22–19	27–18	8–11	3–3	18–42	0–4	0–0
Deposits public administration (GD)	1–2	27–40	14–17	26–20	1–1	14–7	1–1	8–6
Foreign exchange rate								
Foreign exchange rate variation (against the U.S. dollar)	2.95	3.07	10.79	3.48	N/A	1607.6	0.61	0.89
	3.07	2.18	10.9	3.28		2150	0.54	0.8
Foreign exchange rate variation (in percent)	4.07	–28.99	1.02	–5.75	N/A	33.74	–11.48	–10.11
Central bank stereotype 1, 2, ..., 6	–4	–3	–4	–4	–1	–5	(1)	–1

	Norway	China	Japan	Kuwait	India	Saudi Arabia	United Arab Emirates
Assets (in percent)							
Gross international reserves (GIR)	22–16	48–63	4–4	99–98	78–89	88–96	99–97
Domestic credit (DC = CG + CFS)	2–2	40–26	94–93	0–1	8–1	0–0	0–2
IMF (or Norway's oil fund)	68–82						
Liabilities (in percent)							
IMF (or Peru's foreign currency bank reserves and Norway's oil fund)	76–85						
Base money (BM = CASH + BRES)	8–4	67–56	79–75	66–50	73–72	34–14	55–55
Notes and coins in circulation (CASH)	4–3	35–23	55–62	27–25	58–55	27–10	29–24
Deposits of banking institutions (BRES)	4–1	32–33	23–13	38–26	15–17	7–5	26–30
Debt securities (DS)	0–0	4–24	14–19	0–10	0–4	0–0	24–32
Deposits public administration (GD)	8–6	25–11	5–4	21–22	0–2	29–42	19–11
Foreign exchange rate							
Foreign exchange rate variation (against the U.S. dollar)	7.08 6.42	8.28 7.97	115.93 116.29	0.3 0.29	46.56 45.42	3.75 3.75	3.67 3.67
Foreign exchange rate variation (in percent)	–9.32	–3.68	0.31	–2.63	–2.45	0	0
Central bank stereotype 1, 2, ..., 6	–5	–4	–1	–4	–4	–5	(4)

AÑO XVIII Nº 31



NUEVA ECONOMÍA

AÑO XVIII Nº 31 JULIO 2010

ACADEMIA NACIONAL DE CIENCIAS ECONÓMICAS
PALACIO DE LAS ACADEMIAS | CARACAS | VENEZUELA

NUEVA ECONOMÍA

NUEVA ECONOMÍA
Revista sometida al requerimiento de criterios arbitrales, es órgano institucional de la Academia Nacional de Ciencias Económicas y aparece semestralmente. La Revista, en atención al carácter plural de la institución que la produce y edita, mantiene una línea editorial abierta a toda manifestación del pensamiento en el ámbito de las ciencias económicas y sociales, con la expresa exigencia de fundamentación metodológica y pertinencia conceptual en los ensayos y artículos presentados para su publicación.

Los trabajos deben referirse a temas de economía o a materia de interés general de otras ciencias sociales. Son también publicables en esta Revista las colaboraciones de otras disciplinas siempre que se relacionen con las mencionadas. Las opiniones contenidas en los trabajos firmados son de la exclusiva responsabilidad de sus autores, y no necesariamente significan ni revelan las propias de la Academia, excepto cuando se indique lo contrario.

Sólo se aceptan para su publicación textos inéditos en español aunque hayan sido publicados en otros idiomas. Los originales deben ser mecanografiados o impresos (con copia) a doble espacio tamaño carta (cuartilla), con extensión máxima de 40 cuartillas para artículos, de 15 para notas y de 10 para reseñas. NUEVA ECONOMÍA se reserva el derecho de hacer en los trabajos las modificaciones editoriales que juzgue necesarias.
No se devuelven originales enviados a esta Revista para su publicación.

ISSN: 0798-5096
Depósito legal: 199202 DF 136
Correo electrónico: ancecon3@cantv.net
Fax: 58 (212) 482.9330 / 8504
Suscripciones: 58 (212) 482.9330 / 7842

Diseño y Diagramación: Franker Manrique (franker.manrique@gmail.com)

Impresión: Ediciones Luzgráfica, C.A. Telf.: 256.3782

NUEVA ECONOMÍA

AÑO XVII
Nº 31
JULIO 2010

ACADEMIA NACIONAL DE CIENCIAS ECONÓMICAS
CARACAS

INDICE

CONTENIDO

ANGEL GARCIA BANCHS

LA POLÍTICA MONETARIA DE LOS PAÍSES MIEMBROS DE LA OPEP

Este trabajo estudia la política monetaria de los países miembros de la OPEP durante el período 2003-2008. El propósito es identificar similitudes y diferencias en las prácticas monetarias de sus bancos centrales; así que el énfasis es sobre el estudio de sus estructuras de activos y pasivos, en lugar del estudio de temas como el rentismo y la enfermedad holandesa, ampliamente discutidos en la literatura económica de estos tiempos. Los resultados verifican el predominio de las reservas en moneda extranjera en el activo, y las reservas bancarias, los depósitos del gobierno, los certificados de depósitos de la banca central y otros substitutos del efectivo, en el pasivo. La política monetaria de la OPEP, por tanto, contrasta con las prácticas de la Reserva Federal de los EEUU, cuyo balance refleja el predominio del crédito en moneda local en el activo, y del efectivo en el pasivo.

SARY LEVY-CARCIENTE

EN TORNO AL ENFOQUE DE UNA GOBERNANZA FINANCIERA GLOBAL

Las continuas crisis acaecidas desde la segunda mitad del siglo XX, parecieran evidenciar un desacoplamiento entre una institucionalidad financiera rígida e insuficiente y un sistema de dinámica globalizada, flexible y exigente. En un mundo de vertiginosos flujos y corrientes, proyectar la estructura institucional que emergerá del conjunto de transformaciones que están ocurriendo, exige combinar aspectos propios del sistema financiero con aquellas evidenciadas en el plano geopolítico, por lo que la tarea es por demás retadora y compleja, a la vez que insoslayable. El artículo explora algunos elementos del análisis y diseño de una estructura institucional que favorezca el logro de la estabilidad y el desarrollo mundial. Asimismo se describen algunos escenarios posibles en los cuales dicha institucionalidad habría de desenvolverse.

MARCOS MORALES Q.

DEMOCRACIA Y REGÍMENES AUTORITARIOS: ANÁLISIS ECONÓMICO DE LOS FACTORES DE PODER EN EL CASO VENEZOLANO

En este estudio se aborda el impacto de las instituciones económicas sobre el desempeño macroeconómico del país, especialmente en los siglos XX y XXI. Nuestra hipótesis se fundamenta en la determinación de las instituciones sobre el diseño y ejecución de las políticas macroeconómicas. Toda política fiscal, monetaria, cambiaria, se diseña bajo las condiciones políticas y los factores de poder que determinan el equilibrio institucional. Las instituciones económicas están determinadas por las instituciones políticas, que responden a las preferencias de las élites y grupos de poder que conforman los factores de poder *jure* y factores de poder de *facto*. El equilibrio institucional surge del equilibrio de dichos factores. En Venezuela, en los primeros cincuenta años del siglo XX, los factores de poder establecieron tres tipos de instituciones políticas que influyen actualmente en el tejido institucional del país: el patrimonialismo, el rentismo petrolero y el nacionalismo.

MAZHAR AL SHEREIDAH

EL PRECIO COMO INDICADOR DE LA ACTUAL REESTRUCTURACION PETROLERA MUNDIAL

La primera década del siglo XXI reactivó con creces el proceso de transición energética experimentado en los años ochenta. La OPEP facilita el montaje de la nueva Estructura Petrolera Mundial en la cual su participación decrece. El precio de los últimos tres años constituye un nuevo paradigma de la Reestructuración Petrolera Mundial en la cual se refleja *la* ***financierización*** *del petróleo* como *commodity*, además de su génesis como materia prima estratégica. La actual estructura de costos y precios facilita la transición hacia la incorporación del petróleo y gas no convencionales, así como las fuentes renovables de energía. En este proceso las compañías petroleras privadas incrementan su participación, mientras las compañías petroleras nacionales van cediendo espacios ganados desde los años 70.

LA POLÍTICA MONETARIA DE LOS PAÍSES MIEMBROS DE LA OPEP

ANGEL GARCÍA BANCHS

INTRODUCCIÓN

Los miembros de la Organización de Países Exportadores de Petróleo (OPEP), organización fundada en septiembre de 1960, comparten, desde la perspectiva monetaria, al menos dos elementos en común: (i) están obligados a acumular reservas en divisas porque sus facturas petroleras y no petroleras con el exterior no se denominan (cancelan) en términos de sus monedas nacionales (ya que éstas no circulan internacionalmente); y (ii) exhiben, de facto, regímenes cambiarios no flexibles, los cuales implican la intervención de las autoridades en los mercados para determinar los tipos de cambio exógenamente (en buena medida, este segundo punto es consecuencia del primero)[1].

El hecho de que de la factura petrolera de la OPEP se cancele en dólares estadounidenses, en vez de en términos de las monedas nacionales de los miembros de dicha organización (el hecho que las monedas locales de los miembros de la OPEP no circulen en el

[1] La clasificación de los regímenes cambiarios de facto del Fondo Monetario Internacional (FMI), presentada en febrero de 2009 y basada en información procesada hasta abril de 2008, contemplaba lo siguiente: Angola, Ecuador, Qatar, Arabia Saudita, Emiratos Arabes Unidos y la República Bolivariana de Venezuela exhibían regímenes cambiarios fijos con el dólar estadounidense como ancla nominal; Kuwait y Libia exhibían regímenes cambiarios fijos asociados a una cesta de monedas que incluía el dólar estadounidense y el euro; Irak poseía un régimen con devaluaciones progresivas (*Crauwling Peg)* respecto al dólar estadounidense, e Irán en relación a una cesta de monedas; y finalmente Argelia y Nigeria con un régimen de flotación manejada, igualmente, respecto a una cesta de monedas.

exterior), implica que el actual sistema monetario internacional es completamente asimétrico, puesto que el mundo pareciera estar dividido en economías emisoras de reservas (EERs) como los EEUU, la UE, Japón y RU, y economías receptoras de las mismas (ERRs), incluidas las de la OPEP (García y Mata, por publicar; García, Mata y Nell, 2008)[2].

Las asimetrías monetarias internacionales son relevantes tanto para la teoría como la política monetaria, puesto que afectan la estructura de activos y pasivos y el comportamiento de los bancos centrales. El punto es que tanto las EERs como las ERRs se preocupan por el tipo de cambio, los flujos de capitales y los pagos netos al exterior. Pero sólo las últimas se preocupan por la acumulación de reservas en moneda extranjera, puesto que sus monedas nacionales no circulan en el exterior (García, Mata y Nell, 2008).

La noción de las asimetrías monetarias internacionales implica efectos interdependientes: el efecto cantidad y el efecto precio. El primero implica que en las ERRs existe una conexión de política entre el volumen de reservas en divisas, el ritmo del gasto público, y la tasa de interés de corto plazo: el simple hecho de que los bancos centrales receptores tengan que acumular un acervo mínimo de reservas en moneda extranjera afecta la fijación de la tasa de interés y el crecimiento del gasto fiscal (García, Mata y Nell, 2008). El efecto cantidad implica que la estructura de balance de los bancos centrales receptores está caracterizada por el predominio de las reservas internacionales, del lado del activo, y las reservas bancarias, los depósitos del gobierno, las letras emitidas por el banco central,

[2] Hasta el momento de redacción de este trabajo, lo tradicional es que los contratos petroleros se denominen en términos del dólar estadounidense, en vez de en términos de otras monedas de reserva como el euro. Desde la perspectiva del sistema monetario internacional, esto es fundamental en tanto que contribuye a explicar la circulación internacional del dólar estadounidense, al asociársele un valor de uso universal: todos los países requieren petróleo, *ergo* todos requieren dólares. Aunque la explicación detrás del predominio del dólar podría reducirse al hecho de que, a diferencia de la UE y el euro, los EEUU y el dólar cuentan con un mercado de deuda federal libre de riesgo, con un presupuesto fiscal y banco central federal (Reserva Federal) dispuestos a imprimir dinero en caso de ser necesario. La contabilidad macro global implica que para que las economías que acumulan divisas extranjeras (ERRs) pasen a acumular más euros que dólares estadounidenses (i.e. para que el euro sustituya al dólar como moneda de reserva dominante) debe ser el caso que el valor de la deuda en euros de la UE con el resto del mundo supere el valor de la deuda en dólares de los EEUU, toda vez que, por definición, las deudas de las economías emisoras (EERs) constituyen las reservas internacionales de las economías receptoras (ERRs).

y otros substitutos del efectivo, en el pasivo. Esto contrasta con el predominio respectivo de las letras del tesoro y el efectivo en el caso de los bancos centrales emisores.

El segundo efecto es consecuencia del primero; en particular, del hecho de que en las ERRs dos reservas monetarias coexistan: aquella de moneda local que es elástica y aquella de moneda extranjera que no lo es. El precio de la primera es la tasa de interés y el de la segunda el tipo de cambio. El efecto precio implica que en las ERRs el nexo entre la tasa de cambio y la tasa de interés se debilita con el aumento del acervo de divisas: mientras mayor sea tal acervo, mayor será la capacidad del gobierno de limitar el impacto de las fluctuaciones en la tasa de interés (y los flujos de divisas) sobre el tipo de cambio.

Mientras las reservas puedan variar lo suficiente, un alza (caída) de la tasa de interés conducente a entradas (salidas) de divisas podría ser compensada con un alza (reducción) equivalente en el acervo de divisas, limitando así el impacto sobre el tipo de cambio (García, Mata y Nell, 2008). Es pertinente señalar que lo anterior, sumado al sesgo de las autoridades en contra de las apreciaciones cambiarias, explica por qué las ERRs suelen acumular cuantiosos acervos de moneda extranjera, siempre que los costos de esterilización sean considerados relativamente bajos.

Las asimetrías monetarias internacionales implican diferentes estructuras de balance, reacciones de política y comportamientos monetarios que dependen de si la moneda local es o no de reserva internacional – i.e. si se trata de una ERR o EER. La política monetaria es más elástica en las EERs que en la ERRs donde la necesidad de acumular divisas implica que los substitutos del efectivo deben predominar para esterilizar las intervenciones cambiarias (García, Mata y Nell, 2008). Es importante destacar, por tanto, que el hecho de que las EERs no requieran acumular reservas en divisas implica que los tipos de cambio de sus monedas con respecto a las de la ERRs dependan esencialmente de la acumulación de reservas por parte de éstas (e.g. la tasa de cambio peso/dólar).

Por este motivo, el banco central emisor dominante (i.e. la Reserva Federal de los EEUU) apenas puede influir de una forma indirecta sobre los tipos de cambio de la moneda local (el dólar estadounidense) respecto a las monedas de las ERRs (peso, yuan, bolívar, etc.) por medio de cambios en la tasa de interés (induciendo cambios en

portafolios privados); más no puede determinar directamente tales tipos de cambio, al no acumular/desacumular divisas extranjeras (¿por qué acumular divisas si, al final, el dólar circula en el exterior?); por lo contrario, tal ajuste requiere de la coordinación internacional o presiones políticas como aquellas observadas usualmente durante, al menos, la primera década del siglo XXI en el caso del tipo de cambio yuan/dólar, el gobierno de los EEUU y el de China.

Obsérvese que lo anterior no es el caso de las tasas de cambio entre monedas de reserva (e.g. la tasa dólar/euro), las cuales dependen más bien de las fuerzas de mercado y de los diferenciales de intereses (los portafolios del sector privado). Nótese igualmente que las asimetrías monetarias internacionales y la llamada Ley de Thirlwall (Thirlwall, 1979) sobre restricciones de balanza de pagos son complementarias; ambas tienen que ver con la sostenibilidad del crecimiento, aunque la Ley de Thirlwall es más precisa al respecto, al vincular el crecimiento con los desbalances de pagos internacionales. Pero su enfoque es en la esfera real mientras que el de las asimetrías es en la financiera; por tanto, si el dinero es o no una mercancía en oferta fija no importa para Thirlwall. Mientras que, desde la perspectiva de las asimetrías del sistema monetario internacional, la presencia de monedas de reserva internacional con oferta elástica es esencial para explicar ciertos fenómenos tales como: por qué sólo las ERRs deben acumular divisas, y por qué las políticas fiscales y monetarias dependen de si la economía emite o no una moneda de circulación internacional.

En pocas palabras, la noción de las asimetrías monetarias internacionales explica por qué la Ley de Thirlwall aplica sólo a las ERRs y no a las EERs, las cuales pueden expandir su oferta de moneda local para atender desbalances de pagos (déficit de cuenta corriente) con el exterior. Las asimetrías explican por qué las EERs (como los EEUU y la UE) pueden enfrentar crisis crediticias más no monetarias, en el sentido de que siempre existe por lo menos un tipo de cambio (no importa el nivel) al cual sus monedas son aceptadas en el exterior. Es esta condición de existencia la que define matemáticamente la presencia de tales asimetrías (García, Mata y Nell, 2008).

Este trabajo verifica el argumento arriba indicado de García, Mata y Nell (2008) acerca de las estructuras de balance de los bancos centrales para un grupo de países de la OPEP: Irán, Iraq, Kuwait, Libia, Nigeria, Qatar, Arabia Saudita, Emiratos Árabes Unidos y

Venezuela[3]. El énfasis sobre su estructura de activos y pasivos no se debe a que temas ampliamente discutidos en la literatura tales como el rentismo o la enfermedad holandesa no sean importantes, sino exclusivamente a que la observación de sus balances sea la mejor forma de identificar similitudes y diferencias – véase Uslar Pietri (1955), Malavé (1962), Baptista (1997, 2004), Sachs y Warner (1995), García (2002), Corden y Neary (1982) y Corden (1984), entre otros, en relación al rentismo y la enfermedad holandesa.

La próxima sección discute, en el ámbito de la economía abierta, el comportamiento del gobierno y de la banca central de las economías receptoras de reservas (ERRs) en base al trabajo de García, Mata y Nell (2008). La tercera sección plantea el caso teórico de la política monetaria en los países miembros de la OPEP, como caso particular de las ERRs. La cuarta presenta la evidencia empírica sobre la estructura de activos y pasivos de los bancos centrales de la OPEP durante 2003-2008, y la quinta presenta las conclusiones.

1.- LA POLÍTICA MONETARIA DE LA BANCA CENTRAL Y EL GOBIERNO EN LAS ERRs

Las economías receptoras de reservas – entre ellas los países de la OPEP– se caracterizan por su necesidad de acumular reservas en divisas, debido a que sus transacciones con el exterior no suelen ser denominadas (ni cancelables) en términos de sus monedas locales (las cuales no circulan internacionalmente); pero también por el hecho de exhibir regímenes cambiarios de facto no flexibles, o autoridades que intervienen en el mercado debido a la necesidad de limitar las fluctuaciones cambiarias.

La tasa de crecimiento del gasto público en las ERRs depende de distintas variables políticas, sociales y económicas. Pero la disponibilidad relativa de reservas en divisas posiblemente es una de las variables esenciales que la determinan; aunque el anterior, según la lógica, no es necesariamente el caso de las economías con tipos de cambio flexibles, o de aquellas que no se preocupen por las fluctuaciones cambiarias o la acumulación de divisas al exhibir, por ejemplo, una *ratio* de comercio sobre PIB relativamente baja (García, Mata y Nell, 2008).

[3] Los casos de Argelia y Angola no fueron presentados por problemas con la disponibilidad de la información. Mientras que el caso de Ecuador fue descartado por tratarse de un régimen de dolarización completa.

En el caso de las economías que exhiben preocupación por la acumulación de divisas y las fluctuaciones cambiarias (e.g. las economías de los países de la OPEP), la tasa de crecimiento del gasto público suele estar determinado por *ratio* de flujos sobre acervos tales como la *ratio* de importaciones y salidas de divisas sobre reservas de moneda extranjera. Más aún, en esas economías las contracciones (expansiones) monetarias resultantes del superávit (déficit) fiscal han de ser compensadas (absorbidas) con cambios en acervos (i.e. las cantidades) si se desea evitar el ajuste del tipo de cambio y de la tasa de interés (i.e. los precios financieros). Entre los acervos fundamentales de absorción en las ERRs están las reservas en divisas, los depósitos del gobierno que crecen con los impuestos y emisiones de deuda en moneda local y extranjera, y la deuda de la banca central (BC), incluidas las reservas bancarias (depósitos de las instituciones financieras en la BC), certificados de depósitos y otros substitutos del efectivo. La actuación coordinada entre el gobierno y la BC es fundamental, puesto que para acomodar las necesidades de liquidez, fijar la tasa de interés y el tipo de cambio al nivel escogido, deben ajustarse las emisiones de letras y bonos o transferirse depósitos gubernamentales de una forma activa entre la banca privada y el banco central.

La deuda del gobierno y la banca central incluye la deuda en moneda local y extranjera; es decir, el dinero base (efectivo más reservas bancarias), las letras y bonos del tesoro, y letras/CDs del banco central que mantienen los bancos comerciales, netos de la tenencia de letras del tesoro por parte del banco central; mientras que la deuda en divisas se reduce a los bonos soberanos y otras deudas en moneda extranjera.

La tasa de señoreaje es la *ratio* entre la deuda que no paga intereses sobre la deuda total (en moneda local). Las ganancias/pérdidas de capital del gobierno dependen de la revaluación de los bonos en moneda local y extranjera, éstos últimos también afectados por las fluctuaciones cambiarias. La estructura del portafolio del gobierno se basa en motivaciones de estabilización, no de especulación.

El tesoro tiende a mantener depósitos en la banca en base a una fracción constante sobre la totalidad de los depósitos. Los depósitos del tesoro en la BC se tienen en proporción a las reservas en divisas en una situación de déficit, mientras bajo condiciones de superávit, los depósitos del tesoro en el banco central pasan a ser el acervo de

absorción que compensa las intervenciones cambiarias y reduce los costos del proceso de esterilización. Las restricciones asociadas al balance de la banca comercial implican que transferir depósitos del gobierno, de los bancos al banco central, reduce la demanda de los primeros por letras y bonos del tesoro, y CDs de la BC, reduciendo así los costos de esterilización. Hallazgos previos sugieren que la fracción de los depósitos del tesoro en el banco central (relativa a aquéllos en los bancos) es mayor en las ERRs que en las EERs, y sobre todo mayor en los países exportadores de crudo (García, Mata y Nell, 2008) – e.g. en Noruega, el 85-90% del pasivo de la BC son depósitos del tesoro (incluido el fondo petrolero).

Nótese que este mecanismo particular de esterilización es equivalente a un ajuste en la tasa de requerimientos de reservas bancarias, pues ambos reemplazan a las emisiones, ofreciendo al gobierno la posibilidad de ahorrar en intereses; el resultado implica intervenciones en el mercado que evitan apreciaciones del tipo de cambio y esterilizaciones que impiden la caída de la tasa de interés.

En las ERRs como las de la OPEP, la tasa de interés de referencia fijada por la BC (resulta una excepción Venezuela, donde la banca central no fija la tasa interbancaria) depende de diversos objetivos, pero también, de la escasez relativa de reservas en divisas. La tasa objetivo en esas economías podría interpretarse como aquella que las autoridades fijarían bajo un régimen de flotación, o cuando las reservas en divisas son tan cuantiosas que las restricciones externas no aplican; equivalentemente, podría interpretarse como aquella tasa que las autoridades fijarían si sus monedas circulasen en el exterior.

El punto es que, para cierto rango, la tasa de interés de referencia de las ERRs dependería de la disponibilidad relativa de reservas en divisas (i.e. *efecto cantidad*), y también de la preocupación de las autoridades por la estabilidad cambiaria, en la medida en que las fluctuaciones de los precios relativos afectan la inflación, el pago de rentas y otros flujos en divisas hacia el exterior (*efecto precio* - García, Mata, por publicar). En pocas palabras, cuando los gobiernos de las ERRs consideran tener suficientes divisas, fijan la tasa de interés de corto plazo (i.e. la tasa de referencia) igual a la tasa objetivo, caso éste en el cual la política monetaria pasa a ser tan flexible como en las EERs. Pero también fijan la tasa de referencia igual a la tasa objetivo cuando las salidas de divisas son tan cuantiosas que la flotación cambiaria se hace necesaria para ajustar el sistema.

En el último caso, tarde o temprano, las autoridades han de recurrir a incrementos de la tasa de interés (y recortes del gasto) para reponer un acervo mínimo de moneda extranjera suficiente para cubrir los compromisos de los sectores público y privado. Lo anterior implica que la tasa de interés se fija por encima de la tasa objetivo sólo dentro de un intervalo, aquel a lo largo del cual el acervo de divisas resulta suficiente para cubrir los compromisos del gobierno, más no los de toda la economía. De allí que el gobierno supervise con frecuencia la *ratio* de reservas en divisas sobre importaciones y salidas.

Obsérvese, sin embargo, que en el corto plazo el gobierno de la ERR tiene otra alternativa: éste puede estabilizar sus reservas en divisas emitiendo deuda en moneda extranjera (deuda soberana) a un precio determinado a nivel internacional. No obstante, lo anterior sólo ocurre cuando el régimen cambiario no es flexible, cuando las reservas en divisas están por debajo del mínimo tolerado, y existe la opción efectiva de colocar deuda en los mercados internacionales. Ello debido a que estos mercados usualmente no toleran que la deuda en moneda extranjera (deuda soberana de los países) supere cierta proporción entre el PIB y las exportaciones: las relaciones entre flujos y acervos juegan un rol fundamental.

Lo anterior es muy importante, ya que cuando el gobierno es capaz de colocar la cantidad de deuda soberana necesaria para reponer el mínimo de reservas en moneda extranjera, tal deuda actúa como el único acervo de absorción, mientras que cuando el gobierno coloca una cantidad inferior a aquella necesaria para reponer el mínimo acervo tolerado, tanto la deuda como las reservas en moneda extranjera fungen de forma simultánea el rol de acervos de absorción. Es de observar que cuando el nivel de reservas en moneda extranjera es excesivamente bajo llega un punto en que pasa a ser necesario permitir que el tipo de cambio varíe o fluctúe. En este caso no se produce variación en las reservas y la deuda en divisas (cantidades), sino que el tipo cambio (el precio) pasa a ser ajustado exógenamente por las autoridades, o éstas lo dejan flotar, en cuyo caso queda determinado endógenamente por el mercado.

En el caso contrario, asociado a la presencia de influjos crecientes de moneda extranjera, la evidencia en García y Mata (por publicar) sugiere que las autoridades prefieren intervenir para evitar las apreciaciones cambiarias, acumulando suficientes reservas en divisas y disminuyendo sus deudas, mientras mantienen las tasas de interés

y cambio constantes. Bajo tales condiciones, las autoridades deben compensar sus intervenciones cambiarias con emisiones en moneda local, ajustes en la tasa de requerimientos de reservas bancarias y transferencias de depósitos gubernamentales de la banca privada a la BC, de forma tal de reducir los costos fiscales de la esterilización.

En todo caso, el argumento central es que el comportamiento y las decisiones de política en las ERRs dependen de la acumulación de divisas, puesto que ello afecta la estructura de activos y pasivos y, por tanto, las interdependencias entre el gobierno, la banca central y los restantes sectores, a la vez que disminuyen la elasticidad y aumentan la influencia de la política fiscal, monetaria y cambiaria, creando necesidades endógenas de esterilización: los bancos centrales de las ERRs (como, por ejemplo, los de la OPEP) tienden a reemplazar sus tenencias de letras del gobierno local con reservas en divisas, y sus pasivos en efectivo por pasivos de extracción: requerimientos de reservas bancarias, CDs y letras del banco central y depósitos del gobierno en esa institución, tendencia ésta que se acentúa en la medida en que la *ratio* comercio/PIB crece (García y Mata, por publicar).

Intuitivamente, el punto es que las autoridades de las ERRs se sienten tranquilas cuando el acervo de reservas es suficiente para cubrir todos los compromisos públicos y privados, circunstancia bajo la cual siguen acumulando reservas, fijan la tasa de interés igual a la tasa objetivo, repagan deudas previas en divisas, y mantienen el gasto público creciendo a una tasa normal (e.g. China antes de la crisis).

Se percibe que en las ERRs no existe mecanismo económico alguno responsable de acelerar el ritmo del gasto público de forma tal de mantener constante el volumen de las reservas; más bien, éstas pueden crecer sin límite, aunque a una tasa constante. Esto implica que la *ratio* cuenta corriente/PIB de las ERRs −el déficit de las EERs− debe eventualmente converger, aún en la ausencia de crisis globales, decisiones de política económica o fuerzas políticas (internas o externas) que puedan causar el incremento del gasto público o la reducción de las tasas de interés más allá de lo normal − e.g. eventualmente, el déficit en cuenta corriente sobre PIB de los EEUU debería converger, aún cuando esto ocurriría antes si las tasas peso/ dólar se revalúan (e.g. yuan/ dólar) o si los gobiernos de las ERRs, por razones políticas u otras, deciden aumentar su ritmo de gasto.

No obstante, aparte de las presiones políticas internas y externas, en las ERRs no existe incentivo para permitir la libre flotación, recudir las intervenciones, o la tasa de interés por debajo de la tasa objetivo. Obsérvese que en el caso contrario, cuando, más bien, las reservas caen por largo tiempo, la tranquilidad termina: las autoridades saben que pronto deberán reducir su gasto, aumentar las tasas de interés, y su deuda en divisas, mientras las condiciones externas mejoran. Pero si las condiciones no mejoran a tiempo, las ERRs deben restringir su política fiscal mucho más, reduciendo la tasa de crecimiento del gasto público en términos reales, situación ésta que usualmente ocurre cuando las reservas en divisas colapsan por debajo del mínimo, forzando a las autoridades a devaluar o dejar fluctuar el tipo de cambio.

En relación a la banca central (BC) hay que destacar que sus ganancias van al gobierno y están compuestas por el interés neto sobre letras y bonos del tesoro, CDs de extracción, operaciones de redescuento y tenencias netas de reservas en divisas. De allí que usualmente el balance neto de la BC cambie con las fluctuaciones cambiarias que afectan el valor en moneda local de las reservas en divisas. El banco central, pensando en la estabilidad del sistema de pagos, acomoda la demanda de efectivo y reservas bancarias. Pero las tasas de requerimientos de reservas bancarias sobre las cuentas corrientes, cuentas de ahorro y CDs de los bancos comerciales, las establece el banco central. Habitualmente, cuando el régimen no es flexible, tales tasas se incrementan o recortan, dependiendo de las necesidades de esterilización: los cambios en las reservas bancarias no remuneradas ayudan a compensar/esterilizar las intervenciones cambiarias sin costo. Por ello, las tasas de reservas bancarias en moneda local están sujetas a cambios en el proceso de acumulación de divisas (García, Mata y Nell, 2008).

El banco central de la ERR acomoda la demanda/tenencia de depósitos del gobierno (mecanismo esencial de esterilización), acreditando/debitando la cuenta de la tesorería cuando se requiera. El BC también interviene para hacer efectiva la tasa de interés, acomodando su propia demanda de letras del tesoro y la del público. Vale destacar que, contrario al caso de los bancos centrales emisores, lo anterior ocurre básicamente del lado del pasivo con cambios en la oferta de CDs, los cuales pasan a ser el principal acervo de absorción del banco central receptor. Esto se debe a que la demanda de letras del tesoro de los bancos centrales de las ERRs suele ser relativamente

baja (insignificante a veces), ya sea por motivos legales o restricciones autoimpuestas. Es un hecho estilizado que el banco central de las ERRs, donde la inyección monetaria depende primordialmente de la acumulación divisas, tienda a mantener letras del tesoro en una baja proporción del total de su activo (García, Mata y Nell, 2008), proporción que depende usualmente de la *ratio* comercio/PIB (como *proxy* de la preocupación cambiaria), de forma que mientras mayor sea tal *ratio,* menor será la demanda del banco central por las letras locales.

En general lo que importa es que, en las ERRs, el dinero base tiende a inyectarse a través de aumentos del acervo de divisas (activo), y a extraerse en base a reducciones del mismo y aumentos en la emisión de CDs del banco central, la tasa de reservas bancarias y de los depósitos del tesoro en el banco central (pasivo). La política monetaria es, por ende, menos elástica, pero a la vez más influyente en las ERRs que en las EERs, donde los tipos de cambio los determina el mercado (los portafolios privados), no el Estado. El banco central suele fijar la tasa de interés de sus CDs igual o parecida a las de las letras del tesoro, lo cual implica que para los banqueros ambos activos son substitutos. Estos, no obstante, podrían tener que acudir de tanto en tanto a la ventanilla de descuento, situación de iliquidez en la cual las autoridades están forzadas a acomodar su demanda. La tasa de redescuento la fija la banca central por encima de la de referencia.

2.- LA POLÍTICA MONETARIA EN LOS PAÍSES DE LA OPEP

Las economías de la OPEP son, por definición, economías receptoras de reservas (ERRs). Es decir, economías cuyos bancos centrales no emiten monedas de reserva internacional. De allí que sus portafolios se caractericen por el predominio de las reservas en divisas, del lado del activo, y de los substitutos del dinero efectivo como las reservas bancarias (i.e. los depósitos de las instituciones financieras en la BC), los depósitos del gobierno y los títulos de absorción (CDs de la BC), del lado del pasivo. Así sus portafolios reflejan: la intervención o estabilización cambiaria (del lado del activo) y la esterilización o estabilización de la tasa de interés (del lado del pasivo).

Sin embargo, existen dos diferencias entre las economías exportadoras netas de petróleo (e.g. las de la OPEP) y el resto de las ERRs. La primera es que la volatilidad reciente del precio del crudo ha implicado que la estabilización del tipo de cambio y la tasa de interés – la intervención cambiaria y la esterilización – tiendan a ser procesos más manifiestos en el caso de las economías de la OPEP que en el caso de las otras ERRs. Por ejemplo, García, Mata y Nell (2008) hallaron que el peso de las reservas en divisas, en el activo, y los substitutos del efectivo, en el pasivo, era mayor en los exportadores netos de crudo que en el resto de las ERRs estudiadas[4]. Y la segunda es que el arreglo institucional detrás del proceso de intervención cambiaria y esterilización en las economías de la OPEP y el resto de las ERRs suele ser distinto, trayendo como consecuencia que los regímenes cambiarios sean menos flexibles en el caso de las economías de la OPEP que en el resto de las ERRs.

Mientras en el último caso, los bancos centrales suelen intervenir de tanto en tanto en los mercados interbancarios, comprando activos en divisas a cambio de moneda local (estabilización del tipo de cambio) para posteriormente retirarla/absorberla mediante emisiones de títulos públicos y certificados de depósitos (CDs) de la BC, e incrementos de la tasa legal de reservas bancarias (esterilización, o estabilización de la tasa de interés), en el caso de los países de la OPEP, tales intervenciones suelen ocurrir con mayor frecuencia, usualmente vía convenios cambiarios que procuran garantizar un tipo de cambio (precio) fijo para los petrodólares y que, por tanto,

4 García, Mata y Nell (2008) estudiaron para el 2003-2006 a los bancos centrales de Argentina, Brasil, México, Perú, Venezuela, Noruega, China, Kuwait, India y Emiratos Arabes Unidos como ERRs, y a EEUU, la UE, Japón y RU como EERs.

implican una mayor necesidad de instrumentos de absorción substitutos del efectivo[5].

El hecho es que los países exportadores netos de petróleo (e.g. los países de la OPEP) prefieren determinar exógenamente los tipos de cambio de sus monedas con respecto al dólar estadounidense (moneda en base a la cual se denominan los contratos de petróleo) y otras monedas de reserva como el euro. No importa si lo anterior se debe al hecho de que en las economías petroleras no suela cumplirse la condición Marshall-Lerner, o a que las autoridades de la OPEP deseen reducir los efectos adversos de la enfermedad holandesa. Lo que importa es que la preferencia por regímenes cambiarios fijos o poco flexibles conduce necesariamente a la acumulación de reservas en divisas, del lado del activo, y a una aparición más evidente de substitutos del efectivo como mecanismo de esterilización.

En los países de la OPEP, cada vez que sube (cae) el precio del crudo, el banco central interviene en el mercado de dinero para evitar la caída (aumento) del tipo de cambio, entregando moneda local (extranjera) a cambio de la extranjera (local) para posteriormente, esterilizar el efecto de sus intervenciones sobre la tasa de interés, incrementado (reduciendo) considerablemente los substitutos del efectivo. La idea del proceso así descrito es buscar impedir que los cambios en el tan volátil precio del crudo no afecten los salarios reales (tipo de cambio real, o precios relativos). Esto significa buscar que los ajustes en la economía, posterior a cambios en el precio del crudo, ocurran mediante ajustes de cantidades en los portafolios del banco central y el gobierno (i.e. reservas en divisas del lado del activo, y substitutos del efectivo del lado del pasivo), en vez de mediante cambios en los precios de los bienes y servicios y activos y pasivos (el tipo de cambio y la tasa de interés).

5 Un ejemplo es el llamado Convenio Tinoco en el caso venezolano, el cual se remonta a agosto de 1934. Este Convenio buscaba estabilizar el tipo de cambio mediante un acuerdo con las compañías petroleras que lo fijaba en 3,90 Bs/US$ para la compra y 3,93 Bs/US$ para la venta (Mayobre, 1941). Sin embargo, con la reforma de la Ley del Banco Central de Venezuela (BCV) del 2009, la heredera de esas compañías, Petróleos de Venezuela (PDVSA), ya no está obligada a vender la totalidad de sus divisas a la banca central (BCV). Más aún, la presencia del control cambiario, implantado posteriormente al paro petrolero del año 2003, ha implicado presuntamente la posibilidad por parte de PDVSA de vender divisas a un tipo de cambio superior al oficial en el denominado mercado paralelo. El futuro del Convenio Tinoco dependerá, por tanto, de los cambios que ocurran con los arreglos institucionales en respuesta a la reforma de la Ley del BCV.

Sin embargo, el proceso arriba descrito implica una asimetría importante, en tanto que el banco central de un país exportador neto de petróleo está en la posición de evitar las apreciaciones cambiarias indefinidamente (e.g. tipo de cambio riyal/dólar), más no en la posición de evitar indefinidamente las depreciaciones. La razón es que el banco central puede imprimir dinero base (y luego esterilizarlo) *pari passu* con las entradas de divisas, mas no puede imprimir moneda extranjera cuando se requiere vender, para mantener el tipo de cambio fijo, un monto superior al acervo acumulado. De allí que la sostenibilidad de los tipos de cambio fijos de la OPEP disminuya con la tasa de inflación interna, y aumente con la tasa de inflación externa, incluida la tasa de inflación internacional del precio del crudo.

De hecho, si los precios son fijados como un marcaje sobre los costos de producción y, por tanto, los beneficios como una función de los salarios, puede afirmarse que la sostenibilidad de los tipos de cambio fijos en las economías de la OPEP disminuye con la tasa de inflación interna de los salarios y el marcaje sobre los costos de producción; y aumenta con la tasa de incremento de la productividad, y la tasa de inflación externa, incluida la tasa de inflación internacional del precio del crudo.

Ocho ecuaciones y una desigualdad pueden aclarar el por qué del argumento anterior:

$Y \cdot P = W \cdot N + B$ División del PIB transable a costo factorial (1)

$Y^* \cdot P^* = W^* \cdot N^* + B^*$ División del PIB transable del exterior a costo factorial (2)

$B = W \cdot N \cdot (\lambda)$ Beneficios internos como función de los salarios (3)

$B^* = W^* \cdot N^* \cdot (\lambda^*)$ Beneficios del exterior como función de los salarios (4)

$P^* \cdot (X - M) + Pp^* - Mp) \geq 0$ Superávit en cuenta corriente (sostenibilidad) (5)

$M = M_0 + \beta^* \cdot \frac{P}{E \cdot P^*}$ Demanda de importaciones (6)

donde Y es el PIB real transable medido a costo de factores, P el nivel de precios del producto transable, W el nivel de salario promedio, N el número de individuos ocupados en la economía formal e informal, B los beneficios, λ el marcaje sobre costos de producción, X y M las exportaciones e importaciones no petroleras, Xp y Mp exportaciones e importaciones petroleras, Pp^* el precio del petróleo determinado en el resto del mundo, M_0 es el componente exógeno asociado a la demanda de importaciones, $\beta^* \succ 0$ un parámetro, E el tipo de cambio nominal, y, finalmente, el asterisco se refiere a las variables en el resto del mundo.

Las ecuaciones (1) y (2) asociadas a la distribución del PIB transable (a costo factorial) pueden combinarse respectivamente con las ecuaciones (3) y (4) de la siguiente forma:

$P = [W/A] \cdot (1 + \lambda)$ El nivel de precios en la economía interna (7)

$P^* = [W^*/A^*] \cdot (1 + \lambda^*)$ El nivel de precios en la economía del resto del mundo (8)

donde "$A = Y/N$" y "$A^* = Y^*/N^*$" son respectivamente la productividad media del trabajo en el sector transable de la economía nacional y del resto del mundo.

Posteriormente, substituyendo (6) en (5), se obtiene que:

$$E \geq \frac{\beta^* \cdot P}{P^* \cdot (X - M_0) + Pp^* \cdot (Xp - Mp)} \qquad (9)$$

Lo anterior implica que la sostenibilidad del tipo de cambio tiende a disminuir con la inflación interna ($\Delta P \succ 0$), y tiende a aumentar con la inflación externa no petrolera ($\Delta P^* \succ 0$) y la inflación externa petrolera ($\Delta Pp^* \succ 0$).

Finalmente, la ecuación (9) puede ser rescrita en términos de los salarios y el marcaje, substituyendo (7) y (8) en (9):

$$E \geq \frac{\beta^* \cdot [W/A] \cdot (1 + \lambda)}{[W^*/A^*] \cdot (1 + \lambda^*) \cdot (X - M_0) + Pp^* \cdot (Xp - Mp)} \qquad (9)'$$

La sostenibilidad del tipo de cambio tiende a disminuir con la inflación salarial interna ($\Delta W \succ 0$) y el incremento de la productividad en el resto del mundo ($\Delta A^* \succ 0$), y tiende a aumentar con la inflación salarial externa ($\Delta W^* \succ 0$), el incremento interno de la productividad ($\Delta A \succ 0$), y el alza del precio del crudo ($\Delta Pp^* \succ 0$). Si la inflación interna supera a la inflación externa petrolera y no petrolera, eventualmente se hará negativa la cuenta corriente y de capital privado, obligando a devaluar por la caída de las reservas.

3.- CONTRASTE EMPÍRICO

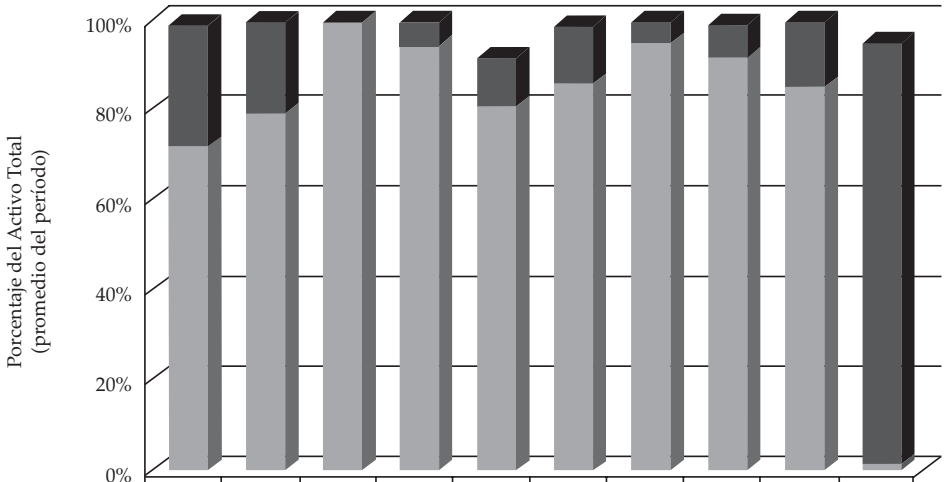
Las estructuras de activos y pasivos de los siguientes bancos centrales de la OPEP fueron contrastadas con la estructura de balance de la Reserva Federal de los EEUU (2003-2007) para el período que va del año 2003 al 2008, o sub-períodos de éste cuando se indique: Irán, Iraq (2005 al 2008), Kuwait, Libia (2004 al 2008), Nigeria, Qatar (2006 al 2008), Arabia Saudita, Emiratos Árabes Unidos y Venezuela.

El gráfico 1 deja en evidencia que los bancos centrales de la OPEP exhiben una estructura de activo que es totalmente opuesta a la de la Reserva Federal de los EEUU[6]. Mientras este último banco mantuvo en promedio durante el período el 93% del activo denominado en moneda nacional, los bancos centrales de Irán, Iraq, Kuwait, Libia, Nigeria, Qatar, Arabia Saudita, Emiratos Árabes Unidos y Venezuela mantuvieron, respectivamente, 27%, 21%, 1%, 6%, 11%, 13%, 5%, 7% y 15%. Y mientras la Reserva Federal de los EEUU mantuvo apenas un 2% de su activo en moneda extranjera, los bancos centrales de Irán, Iraq, Kuwait, Libia, Nigeria, Qatar, Arabia Saudita, Emiratos Árabes Unidos, y Venezuela mantuvieron, respectivamente, 72%, 79%, 99%, 94%, 81%, 86%, 95%, 92% y 85%.

Claramente, el componente fundamental del activo en el caso de los EEUU es aquel denominado en moneda nacional, mientras que el componente esencial del activo en el caso de los bancos centrales de los países de la OPEP es aquel denominado en moneda extranjera. El hecho de si la moneda nacional circula o no en el exterior y el régimen cambiario determinan las necesidades y la preferencia por la liquidez en divisas de los bancos centrales (García, Mata y Nell, 2008).

6 Los efectos de la crisis financiera global sobre la estructura del pasivo de la Reserva Federal de los EEUU han sido notorios. Para marzo del año 2010, el principal componente ha dejado de ser el efectivo (39%) pasando a ser las reservas bancarias (51%) depositadas por las instituciones financieras asistidas durante el proceso de intervención de las autoridades en los mercados hipotecarios. La Reserva Federal de los EEUU, a raíz de la crisis, se vio obligada a intervenir para acomodar las necesidades de liquidez de los bancos, comprando activos "tóxicos" a cambio de reservas bancarias que han esterilizado los efectos de las intervenciones sobre la tasa de interés. El activo sigue denominado en la moneda nacional, el dólar (99%), a pesar de la crisis financiera, y es de esperar que el efectivo recupere gradualmente su predominio.

Gráfico 1: Estructura del Activo de los bancos centrales de la OPEP y su comparación con el Activo de la Reserva Federal de los EEUU.



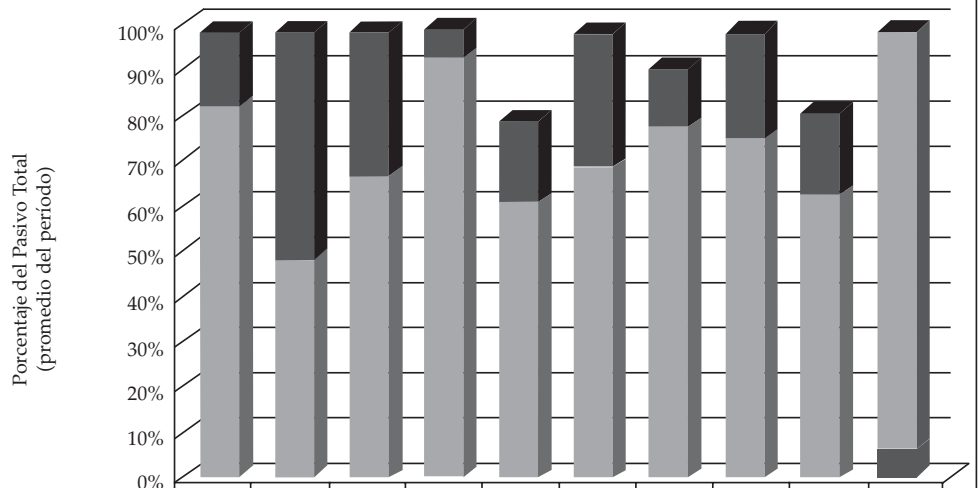
	Irán 2003 al 2008	Iraq 2005 al 2008	Kuwait 2003 al 2008	Libia 2004 al 2008	Nigeria 2003 al 2008	Qatar 2006 al 2008	Arabia Saudita 2003 al 2008	Emiratos Arabes Unidos 2003 al 2008	Venezuela 2003 al 2008	EEUU 2003 al 2008
Moneda nacional	27%	21%	1%	6%	11%	13%	5%	7%	15%	93%
Moneda extranjera	72%	79%	99%	94%	81%	86%	95%	92%	85%	2%

Fuente: Bancos centrales y cálculos propios. La sumatoria del activo denominado en moneda nacional y extrajera no necesariamente debe dar 100%, toda vez que existen otros activos (e.g. reales).

En relación al pasivo, el efectivo representó en promedio, durante el período analizado, alrededor del 92% en el caso de la Reserva Federal de los EEUU y, respectivamente, 11%, 29%, 28%, 6%, 16%, 29%, 13%, 24% y 18% en el caso de Irán, Iraq, Kuwait, Libia, Nigeria, Qatar, Arabia Saudita, Emiratos Árabes Unidos y Venezuela. Por lo contrario, mientras los substitutos del efectivo representaron 7% del pasivo para la Reserva Federal de los EEUU, en el caso de Irán, Iraq, Kuwait, Libia, Nigeria, Qatar, Arabia Saudita, Emiratos Árabes Unidos, y Venezuela representaron, respectivamente, 82%, 48%, 67%, 93%, 61%, 68%, 78%, 75% y 63% (véase el Gráfico 2).

Es claro que el componente esencial del pasivo en el caso de los EEUU es el efectivo, mientras que son los substitutos del efectivo en el caso de los bancos centrales de los países pertenecientes a la OPEP. Las necesidades de esterilización posteriores a las intervenciones cambiarias – la fijación de la tasa de interés – determinan el pasivo de los bancos centrales receptores de reservas (García, Mata y Nell, 2008). En particular, de los substitutos del efectivo, los depósitos de la administración pública representaron para la Reserva Federal de los EEUU el 1% del pasivo, mientras que en el caso de Irán, Iraq,

Gráfico 2: Estructura del Pasivo de los bancos centrales de la OPEP y su comparación con el Pasivo de la Reserva Federal de los EEUU.



	Irán 2003 al 2008	Iraq 2005 al 2008	Kuwait 2003 al 2008	Libia 2004 al 2008	Nigeria 2003 al 2008	Qatar 2006 al 2008	Arabia Saudita 2003 al 2008	Emiratos Arabes Unidos 2003 al 2008	Venezuela 2003 al 2008	EEUU 2003 al 2008
Efectivo	11%	29%	28%	6%	16%	29%	13%	24%	18%	92%
Sustitutos del efectivo	82%	48%	67%	93%	61%	68%	78%	75%	63%	7%

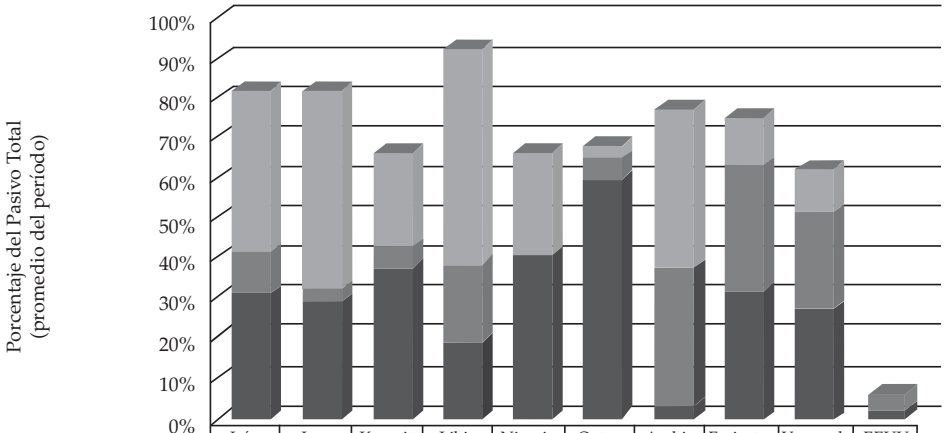
Fuente: Bancos centrales y cálculos propios. La sumatoria del efectivo y sus substitutos no tiene por qué dar 100% necesariamente, toda vez que existen otros pasivos.

Kuwait, Libia, Nigeria, Qatar, Arabia Saudita, Emiratos Árabes Unidos, y Venezuela representaron, respectivamente, 40%, 15%, 24%, 54%, 20%, 3%, 40%, 12% y 11% (véase el gráfico 3).

Igualmente, entre los substitutos del efectivo, los certificados de depósitos (CDs) y títulos emitidos por la banca central representaron para la Reserva Federal el 4% del pasivo, mientras que en el caso de Irán, Iraq, Kuwait, Libia, Nigeria, Qatar, Arabia Saudita, Emiratos Árabes Unidos y Venezuela representaron, respectivamente, 10%, 3%, 5%, 19%, 0%, 5%, 34%, 32% y 34% (véase el Gráfico 3).

Finalmente, también entre los substitutos del efectivo, las reservas bancarias depositadas en la banca central representaron para la Reserva Federal de los EEUU el 2% del pasivo, mientras que en el caso de Irán, Iraq, Kuwait, Libia, Nigeria, Qatar, Arabia Saudita, Emiratos Árabes Unidos y Venezuela representaron, respectivamente, 32%, 29%, 38%, 19%, 41%, 60%, 4%, 32% y 27% (véase el Gráfico 3).

Gráfico 3: Estructura de los substitutos del efectivo de los bancos centrales de la OPEP y su comparación con el caso de la Reserva Federal de los EEUU.



	Irán 2003 al 2008	Iraq 2005 al 2008	Kuwait 2003 al 2008	Libia 2004 al 2008	Nigeria 2003 al 2008	Qatar 2006 al 2008	Arabia Saudita 2003 al 2008	Emiratos Arabes Unidos 2003 al 2008	Venezuela 2003 al 2008	EEUU 2003 al 2008
Depósitos Adm. Pública	40%	15%	24%	54%	20%	3%	40%	12%	11%	1%
CDs y titulos pasivos de la BC	10%	3%	5%	19%	0%	5%	34%	32%	24%	4%
Reservas bancarias	32%	29%	38%	19%	41%	60%	4%	32%	27%	2%

Fuente: Bancos centrales y cálculos propios.

En todo caso, los datos empíricos reflejan claramente que los bancos centrales de los países de la OPEP, optan por substitutos del efectivo tanto sin costo fiscal (sin pago de intereses) – modificación de la tasa legal de reservas bancarias, o el traspaso de los depósitos del gobierno de la banca privada a la banca central – como con costo fiscal – como la emisión de certificados de depósitos (CDs) y títulos de deuda – a la hora de esterilizar los efectos sobre la tasa de interés resultantes de sus intervenciones en el mercado cambiario.

En pocas palabras, mientras el Banco de la Reserva Federal de los EEUU se concentra fundamentalmente en la fijación de la tasa de interés comprando y vendiendo títulos del Tesoro de los EEUU, los bancos centrales de los países de la OPEP no sólo fijan la tasa de interés (Venezuela es la excepción al preocuparse por el control de los agregados monetarios), sino que también intervienen directamente en los mercados cambiarios para procurar estabilizar el tipo de cambio con operaciones del lado del activo, y esterilizar/compensar los efectos que tales intervenciones tienen sobre la tasa de interés que fijan mediante la utilización de substitutos del efectivo.

CONCLUSIONES

Este trabajo se basa en el estudio de la política monetaria en 9 de las 12 economías de la OPEP durante el período 2003-2008. En lugar de estudiar fenómenos que se encuentran ampliamente discutidos en la literatura como el rentismo y la enfermedad holandesa – véase Uslar Pietri (1955), Malavé (1962), Baptista (1997, 2004), Sachs y Warner (1995), García (2002), Corden y Neary (1982) y Corden (1984), aquí se busca identificar similitudes y diferencias entre prácticas monetarias de los distintos bancos centrales de la organización y, por tanto, se propone estudiar sus estructuras de activos y pasivos.

Los resultados en el caso de todos y cada uno de los bancos centrales de la OPEP verifican los hallazgos de García, Mata y Nell (2008) para lo que ellos denominan economías receptoras de reservas (ERRs), confirmando la preponderancia, en el activo, de las reservas en moneda extranjera, y, en el pasivo, de las reservas bancarias primarias, los depósitos del gobierno, los certificados de depósitos (CDs) de la banca central y otros substitutos del efectivo. El trabajo concluye que la política monetaria de la OPEP contrasta con las prácticas de la Reserva Federal de los EEUU, cuyo balance, contrariamente, refleja el predominio del crédito en moneda local, del lado del activo, y del efectivo, del lado del pasivo.

Referencias

Baptista, Asdrúbal (1997): *Teoría económica del capitalismo rentístico*. Ediciones IESA, Caracas.

Baptista, Asdrúbal (2004): *El relevo del capitalismo rentístico: hacia un nuevo balance de poder.* Fundación Polar. Caracas.

Corden, W.M. (1984): "Boom Sector and Dutch Disease Economics: Survey and Consolidation". *Oxford Economic Papers*, 36: 362.

Corden W.M., y Neary J.P. (1982): "Booming Sector and De-industrialisation in a Small Open Economy". *The Economic Journal* 92 (December): 829-831.

García, A. G., Nell, E. J., y Mata, L. (2008): "Asimetrías monetarias internacionales y Banca Central". *Revista Investigación Económica*, Facultad de Economía, Universidad Nacional Autónoma de México, LXVII (265), 145-187.

García, A., L. Mata, "International Monetary Asymmetries and the Central Bank". *Journal of Post Keynesian Economics* [por publicar en español].

García L., Humberto (2002): "La paradoja cambiaria en Venezuela", *Revista Venezolana de Análisis de la Coyuntura*. Instituto de Investigaciones Económicas. FACES-UCV, Volumen VIII, N° 2, julio-diciembre.

Sachs, J. y Warner (1995): "Natural Resource Abundance and Economic Growth", National Bureau of Economic Research, Working Paper 5398.

Malavé Mata, H. (1962): *Petróleo y desarrollo económico de Venezuela*. Ediciones Pensamiento Vivo. Caracas.

Uslar Pietri, Arturo (1955): "El Petróleo en Venezuela". Discurso de Incorporación a la Academia de Ciencias Políticas y Sociales de Venezuela, en Uslar Pietri, Arturo (1966), *Petróleo de Vida o Muerte*, Editorial Arte, Caracas.

Mayobre, J. A. (1941): "La paridad del bolívar", en *Obras escogidas*, BCV, Caracas 1982.

investigación económica, vol. LXVII, 265, julio-septiembre, 2008, pp.

Asimetrías monetarias internacionales y Banca Central

Ángel García Banchs
Luis Mata Mollejas
Edward J. Nell*

[…] *y así hemos vuelto al punto de donde partimos: el hecho de que el dinero es un servidor y no un amo, un medio y no un fin.*
Robertson, 1955(1922), p. 184.

Introducción: el dinero hoy

El dinero es medio de cambio y reserva de valor, pero sobre todo es unidad de cuenta para créditos y débitos. Por ello, es también el instrumento a través del cual gran parte de nuestras obligaciones son socialmente saldadas. Y, aunque sus orígenes se pierden en el tiempo, el dinero es una institución en permanente evolución. Él es, en esencia, un reconocimiento de deuda y, como tal, se ha transformado desde ser un símbolo-mercancía con valor intrínseco hasta ser un símbolo-no mercancía cuya circulación interna depende plenamente de la capacidad del Estado para hacer efectivo el cobro de los impuestos (Knapp, 1905; Keynes, 1930; Lerner, 1943; Nell, 1998; Wray, 2004).

Manuscrito recibido en septiembre de 2007; aceptado en marzo de 2008.

* New School University , Nueva York, Universidad de Siena, Italia, y Universidad Central de Venezuela, <garciaa@newschool.edu>; Universidad Central de Venezuela, <lmatam@cantv.net>, y New School University, Nueva York, <nelle@newschool.edu>, respectivamente. Los autores agradecen los valiosos comentarios de dos dictaminadores anónimos a versiones anteriores del presente trabajo.

Sin embargo, el hecho de que todo Estado nacional pueda hacer circular su propia moneda a nivel nacional contrasta con el hecho de que no todos puedan hacerlo a nivel internacional. Por ello, sostenemos que el actual sistema monetario es asimétrico al dividir las economías en emisoras y receptoras de reservas. El hecho es que, posterior a la Segunda Guerra Mundial, la oferta inelástica de oro como medio de pago internacional pasó a ser remplazada por una oferta elástica de dólares, a la cual se han ido sumando a la postre otras pocas monedas de circulación internacional. De allí que, desde entonces, la gran mayoría de los países se hayan visto obligados a acumular reservas de tales monedas para poder cumplir con sus compromisos con el exterior.

En consecuencia, cabe formular las siguientes preguntas: i) ¿cuáles son las diferencias entre las prácticas monetarias de las distintas economías y a qué se deben?, ii) ¿cómo se relacionan las mismas con las teorías del dinero? y iii) ¿cómo pueden observarse tales diferencias, y cuáles países tienden a seguir patrones similares?

En respuesta a estas interrogantes, el presente trabajo parte de la identificación de las diferencias esenciales entre las visiones teóricas del dinero, para contribuir posteriormente con nuevos conceptos destinados a facilitar la compresión de las causas y consecuencias esenciales de lo que definiremos como *asimetrías monetarias internacionales*. Como método de contrastaste empírico en sustento de las explicaciones ofrecidas, el trabajo propone y calcula indicadores cuantitativos derivados del balance de activos y pasivos de los bancos centrales para así clasificar y evaluar su comportamiento.

El ensayo se estructura de la siguiente forma: la segunda sección resume los postulados e implicaciones de las teorías exógena y endógena del dinero. La tercera sección estudia las causas y consecuencias de las asimetrías monetarias internacionales, al incorporarlas dentro del cuerpo de la teoría endógena. La cuarta sección propone un nuevo método de estudio de los bancos centrales en función de indicadores cuantitativos provenientes de sus estructuras de activos y pasivos. La quinta sección trata la metodología, la sexta presenta los resultados y la séptima resume las conclusiones.

Las visiones esenciales del dinero

Una teoría es una imagen simplificada de los hechos, por ello mientras más antigua sea más fuerte será su conexión con el pasado. Así, *la teoría exógena del dinero* se remonta a las economías tipo agrícola-artesanal con rendimientos decrecientes a escala, una alta correlación negativa entre el nivel de inversión y la tasa de interés, y el pago de salarios en función de la productividad marginal. Según esta teoría, los ajustes automáticos a través del sistema de precios ocurren de forma tal que existe una tendencia al pleno empleo y a la distribución armónica del ingreso (Friedman, 1956).

Dicha visión enfatiza el papel del dinero como medio de cambio y reserva de valor, pero de forma tal que se le considera una mercancía cuya función básica es reducir costos transaccionales. Según este enfoque, se espera que las reservas monetarias se vean físicamente restringidas y que la tasa de interés quede endógenamente determinada en el mercado de bienes, en función de la escasez. De allí que se espere que el ahorro anteceda a la inversión y que los depósitos y reservas sean requeridos para expandir el crédito.

Como resultado de lo anterior, la teoría exógena del dinero acepta la dirección de causalidad que va de la oferta monetaria al ingreso nominal, de forma tal que la inflación se considera como un fenómeno de demanda cuyo origen se deriva del exceso de dinero; por ello, se enfatiza el papel de la política monetaria, y el de la política fiscal se minimiza.[1]

Por el contrario, *la teoría endógena del dinero* se ajusta a las realidades del mundo moderno. Las primeras contribuciones se remontan a Wicksell (1898), Bernacer (1922), Robertson (1955 [1922]), y Keynes (1930, 1936), y su desarrollo incluye los aportes de los teóricos contemporáneos, poskeyne-

[1] En términos modernos, de acuerdo con la teoría exógena del dinero, las autoridades deben reducir la brecha del producto y controlar la inflación a través del manejo de la cantidad de dinero o la tasa de interés. Pero, en el caso extremo del monetarismo al suponer constante la velocidad de circulación del dinero en el largo plazo y al esperar que la economía tienda naturalmente a un equilibrio único de pleno empleo, el objetivo de la Banca Central queda reducido a garantizar la estabilidad de precios a través del control de los agregados monetarios.

sianos y circuitistas, como Arestis (1992), Davidson (1972), Kaldor (1982), Lavoie (1992), Minsky (1957), Moore (1988), Nell (1998), Rochon (2001) y Wray (2004), entre otros.

Su análisis tiende a concentrarse en una economía de producción en masa caracterizada por rendimientos crecientes a escala así como por la dependencia de la inversión de la tasa de beneficios y del mantenimiento de un nivel deseado de utilización del capital.[2] En vez de ajustes de precios automáticos conducentes al pleno empleo, se espera que los ajustes sean incompletos y en cantidades, obedeciendo a efectos multiplicadores. Dentro de este esquema, los salarios se negocian en la esfera socio-política como parte de un proceso conflictivo de distribución del ingreso, representando éste el factor de mayor influencia sobre los costos de producción y la inflación.

Cabe destacar que en la visión endógena, el valor del dinero no tiene ancla. Las reservas monetarias no enfrentan ninguna restricción, y la tasa de interés se fija exógenamente por el Estado.[3] El crédito genera depósitos, la disponibilidad de reservas monetarias no limita la expansión del crédito y la inversión antecede al ahorro, ya que éste es sólo un residuo que reduce la demanda agregada.

---

[2] En este trabajo se acepta la visión evolutiva de la teoría de la oferta monetaria endógena. Según ésta, la endogeneidad del dinero es un hecho relativamente reciente, ya que es el resultado de ciertas transformaciones relacionadas no sólo con el sistema financiero sino también con la economía real (Nell, 1998). Para una visión alternativa, en defensa de la idea de que la oferta de dinero siempre ha sido endógena, véase Rochon (2001) y Wray (2004), entre otros.

[3] El propósito de este trabajo es empirista, puesto que lo que se pretende es reflejar la evidencia de la existencia de divergencias monetarias entre las distintas economías, más que fijar una posición entre las visiones estructuralista, horizontalista y circuitista. Por ese motivo, así como por razones de espacio, dejamos concientemente a un lado las discusiones internas dentro del pensamiento poskeynesiano. En pocas palabras, la discusión acerca del grado de exogeneidad de la tasa de interés, del papel de la preferencia por la liquidez y de la incertidumbre, será obviada con el propósito de privilegiar la discusión de fondo que pretende este trabajo: el análisis del grado de exogeneidad y control que sobre la tasa de interés tienen las autoridades monetarias de las distintas economías tanto emisoras como receptoras de reservas. No obstante, para el lector interesado en la discusión interna, véase Wray (2004).

La demanda agregada es validada mas no determinada por la cantidad de dinero, razón por la cual la dirección de causalidad se invierte: yendo del ingreso nominal efectivo y esperado a la oferta monetaria, y no al revés. El dinero es efecto mas no causa, pues el mismo es determinado por su propia demanda y el sistema monetario es flexible, acomodándose a las necesidades de la producción y el comercio.

Precisamente, la producción, el comercio, el pago de los salarios e insumos, y la propia incertidumbre crean la base para la demanda y circulación del crédito privado, cuya oferta está asegurada por la existencia de líneas de crédito prenegociadas con los bancos. Estos, por su parte, fijan sus tasas como un *mark up* sobre el costo promedio de los fondos, pero realizan ajustes a las mismas en función de sus perspectivas y niveles de confianza. Para ello, toman en cuenta no sólo el grado de incertidumbre genérica reinante sino también el riesgo específico de los diversos sectores prestatarios.

Por otro lado, la demanda y la circulación del dinero base están asociadas con los requerimientos de efectivo y reservas bancarias, pero sobre todo están aseguradas por el hecho de que éste es el único instrumento aceptado por el Estado para el pago de los impuestos (Knapp, 1905). Esto implica que, a pesar de las innovaciones financieras destinadas a economizar reservas, la tasa de interés de corto plazo siempre permanecerá bajo el control del Estado (Fullwiler, 2006).[4] Pero, en el ámbito de la economía abierta, más allá de las diferencias internas entre estructuralistas, horizontalistas y circuitistas (véase la nota 3), sostendremos que la libertad con la cual se fija la tasa de interés dependerá de los efectos resultantes de las asimetrías monetarias internacionales. Previo a esa discusión, no obstante, la tabla 1 resume las diferencias señaladas entre las visiones exógena y endógena en el ámbito de la economía cerrada.

[4] Contrario a las propuestas de política basadas en la teoría exógena del dinero, la teoría endógena propone políticas fiscales y políticas de ingresos para el control de la demanda agregada y la inflación. Por ello, lo mejor que las autoridades pueden hacer es acomodar la demanda de reservas bancarias, fijando una tasa de interés baja y estable para garantizar el buen funcionamiento de los sistemas de pagos y financiero.

Tabla **1**
Conclusiones teóricas sobre ambas visiones del dinero

Concepto	Teoría exógena del dinero		Teoría endógena del dinero	
	Postulado	*Implicaciones*	*Postulado*	*Implicaciones*
Sistema financiero	El ahorro antecede a la inversión.	Las reservas y los depósitos son necesarios para la expansión crediticia. Los ajustes de portafolio son irrelevantes.	La inversión antecede al ahorro.	Los créditos crean depósitos, y la disponibilidad de reservas no limita la expansión crediticia. El ahorro es un residuo que reduce la demanda agregada. Los ajustes de portafolio son cruciales.
Sistema monetario	El dinero es una mercancía cuyo propósito primordial es reducir costos transaccionales.	El valor del dinero está atado a una mercancía. Las reservas son limitadas y la tasa de interés se determina endógenamente en función de la escasez.	El dinero circula gracias a la autoridad y poder de coerción del Estado en el establecimiento y cobro de impuestos.	El valor del dinero no tiene ancla. Las reservas monetarias son ilimitadas y la tasa de interés es fijada exógenamente por el Estado y la Banca Central.
Dirección de causalidad	De la oferta de dinero al ingreso nominal.	La inflación es un fenómeno de demanda cuya causa es el exceso de dinero.	Del ingreso nominal efectivo y esperado a la oferta de dinero.	El dinero es determinado por su propia demanda; por ello es efecto y no causa. El dinero valida pero no determina a la demanda agregada.
Política económica	Se enfatiza el papel de la política monetaria. Pero el de la política fiscal es minimizado, ya que conduce al aumento de la tasa de interés, reduciendo la inversión.	Las autoridades monetarias deben reducir la brecha del producto y la inflación controlando la tasa de interés o la cantidad de dinero.	La política monetaria es acomodaticia. Pero la política fiscal y la política de ingresos permiten estabilizar el producto y la inflación.	Las autoridades monetarias deben acomodar la demanda de reservas y fijar una tasa de interés baja y estable para garantizar el buen funcionamiento de los sistemas de pagos y financiero.

Asimetrías monetarias y la teoría del dinero endógeno

Hemos señalado que el fin de la Segunda Guerra Mundial llevó a cambios que deben ser plenamente identificados, lo cual requiere nuevos conceptos. Por ello, en primer lugar, definimos a una *economía receptora de reservas* (ERR) como aquella cuyas transacciones internacionales involucran el uso y aceptación de divisas extranjeras, dado que la moneda local (de existir una) no es aceptada como medio de pago internacional. En este caso, la exogeneidad de la tasa de interés es muy débil, pues su fijación por parte de la Banca Central debe tomar muy en cuenta las fluctuaciones esperadas en el nivel de las reservas internacionales (efecto cantidad) y en el tipo de cambio (efecto precio). Esto se debe a la fuerte incidencia de dichas fluctuaciones sobre la economía real.

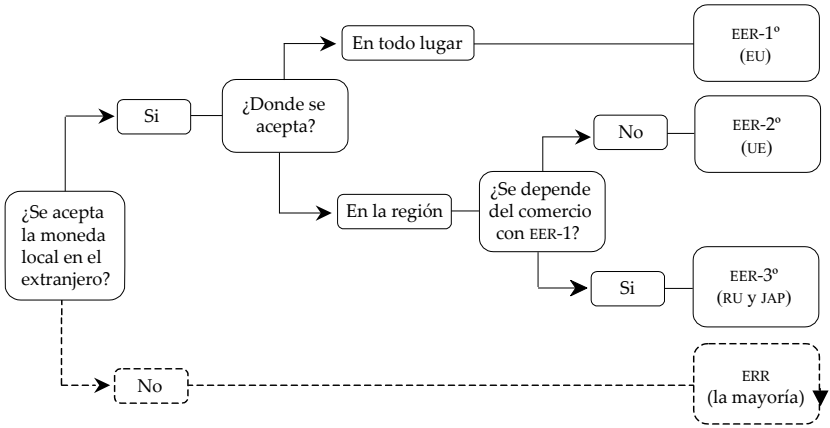
Segundo, definimos a una *economía emisora de reservas de primer orden* (EER-1°) como aquella única economía del sistema cuyas transacciones con el exterior se efectúan, sin excepción, en términos de su propia moneda, a la cual denominaremos en lo sucesivo: *moneda de reserva dominante*. En este caso, la exogeneidad de la tasa de interés es extremadamente fuerte, debido a que las fluctuaciones esperadas en el tipo de cambio y en el nivel de reservas internacionales poco inciden sobre la economía real.

Tercero, definimos a una *economía emisora de reservas de segundo orden* (EER-2°) como aquella cuyas transacciones dentro de una región comercial de influencia son efectuadas en términos de su propia moneda, pero cuyas transacciones fuera de la región se llevan a cabo usando la *moneda de reserva dominante*. En este caso, la necesidad de mantener un acervo de reservas de la moneda dominante implica que el grado de control sobre la tasa de interés disminuye respecto al caso de la EER-1°. Sin embargo, dado el alto volumen de comercio intraregional que caracteriza a las EERS-2°, tal disminución se considera relativamente leve cuando se le compara con el caso de las ERRS en general.

Finalmente, definimos a una *economía emisora de reservas de tercer orden* (EER-3°) como aquella caracterizada por compartir las particularidades de las EERS-2°

pero a la vez se distingue por depender de su comercio con la EER-1° (véase el diagrama 1). En este caso, la necesidad de acumular reservas internacionales, y por tanto la pérdida de flexibilidad en la fijación de la tasa de interés, es aún mayor que en el caso de las EERs-2° pero menor que en el caso de las economías receptoras. En pocas palabras, en orden de mayor a menor flexibilidad, la EER-1° es la primera en la lista, seguida por las EERs-2°, luego por las EERs-3 y finalmente por las ERRs. No obstante, por simplicidad de lenguaje, en lo sucesivo nos referiremos únicamente a economías emisoras (EER) y receptoras de reservas (ERR).[5]

Diagrama **1**
Definiciones: economías receptoras de reservas (ERR) y economías emisoras de reservas (EER) de 1°, 2° y 3° orden



[5] Obsérvese que, en el mundo actual, estos conceptos pasan a ser más precisos que la definición difusa entre monedas fuertes y débiles originalmente basada en la evolución de la balanza de pagos con el exterior. Estos cuatro conceptos, que por simplicidad pueden ser reducidos a dos, se encuentran más bien vinculados a las funciones, prácticas y ambiente institucional que caracterizan a los bancos centrales modernos. Así, por ejemplo, en la actualidad según nuestra terminología, la EER-1º es Estados Unidos y la moneda de reserva dominante el dólar estadounidense. Mientras que la Unión Europea representa el único caso de las EERs-2°, y el Reino Unido y Japón el de las EERs-3°. La razón

Los efectos de las asimetrías monetarias y la visión endógena

Contrario al caso de las economías emisoras, las economías receptoras de reservas se encuentran expuestas a los efectos adversos resultantes de la presencia de asimetrías monetarias internacionales. Ello significa que, a la hora de fijar la tasa de interés, la Banca Central de las economías receptoras debe preocuparse por las fluctuaciones esperadas tanto del nivel de sus reservas internacionales como del tipo de cambio, lo cual no sucede en el caso de las economías emisoras.[6]

Vale la pena entender ambos efectos por separado. El primero es el *efecto cantidad* el cual está asociado a la necesidad de las economías receptoras de preservar un nivel mínimo de reservas internacionales, habida cuenta de que en ese caso el dinero emitido por el Estado no puede fungir como medio de pago internacional; es decir, porque la moneda local de esas economías no es aceptada en el exterior.[7] Este primer efecto establece una conexión (de oferta) entre la tasa de interés de corto plazo fijada por la Banca Central y el nivel mínimo de sus reservas internacionales.

---

es simple. Contrario al caso de la Unión Europea, tanto el Reino Unido como Japón dependen en alguna medida de su volumen de comercio con Estados unidos y, por tanto, deben acumular reservas en dólares y preocuparse por el tipo de cambio con respecto a esa moneda. Finalmente, obsérvese que, por ejemplo, aunque Suiza es una ERR la misma cuenta con una moneda fuerte y, aunque Estados Unidos es la EER-1° su moneda se ha debilitado últimamente frente al euro, la libra, el yen y muchas otras monedas. Por tanto, de acuerdo con nuestra terminología es claramente posible observar una moneda fuerte que no es de reserva internacional y una moneda débil que sí lo es.

[6] En particular, las salidas netas de divisas, así como las expectativas de una disminución del nivel de reservas o de un aumento del tipo de cambio, conducirían a una pérdida de flexibilidad caracterizada por la fijación de una tasa de interés mayor a la que en otras circunstancias externas fijaría la Banca Central. Mientras que, por el contrario, las entradas netas de divisas y las expectativas favorables en el mercado cambiario conducirían a una mayor flexibilidad, facilitando la fijación de la tasa de interés acorde al nivel deseado por la Banca Central. Esto sucede cuando la estabilización del tipo de cambio pasa a ser un objetivo de la política monetaria, como es usual en el caso de las ERRS.

[7] El argumento anterior no excluye la posibilidad de que economías emisoras acumulen reservas —*e.g.* en el caso de las EERS-3°: Japón y Reino Unido.

La razón es que, independientemente del régimen cambiario, los bancos centrales de las economías receptoras deben mantener un acervo de divisas por lo menos suficiente para garantizar el pago oportuno de las deudas externas gubernamentales. Pero, en otros casos, los bancos centrales pudieran también verse incentivados, o comprometidos, a mantener volúmenes de reservas en divisas aun mayores, todo esto con el propósito de aumentar su influencia sobre el tipo de cambio. Esto nos conduce al *efecto precio*.Este se deriva naturalmente del primero, es decir del hecho de que en las ERRs los bancos centrales deban operar con dos formas de reservas monetarias: dinero base nacional y reservas internacionales. El precio de la primera es la tasa de interés y el de la segunda el tipo de cambio. El efecto precio implica que en las ERRs existe una fuerte conexión entre el tipo de cambio y la tasa de interés de corto plazo, ya que el control de las autoridades sobre esta última variable tiende a disminuir en la medida en que aumentan las preocupaciones por la estabilidad cambiaria. Vale destacar que este vínculo también es de oferta, y no de demanda, pues es la Banca Central y no el mercado el responsable de establecer la conexión entre ambos precios.

Esto se debe a que, a la hora de fijar la tasa de interés de corto plazo, las autoridades de las ERRs deben anticiparse a los mercados, habida cuenta de que la sustituibilidad existente entre ambas monedas es capaz de poner en riesgo la estabilidad cambiaria. Esta es, pues, una conexión distinta a aquella tantas veces reiterada entre la tasa de interés de largo plazo y el tipo de cambio. La conexión que queremos destacar es de oferta y sólo está presente en las ERRs, donde la necesidad de evitar las fluctuaciones del tipo de cambio obligan a la Banca Central a limitar la expansión del dinero base por medio del manejo de la tasa de interés.

En este sentido, el sistema monetario internacional es asimétrico, ya que en las economías emisoras de reservas ninguno de estos dos efectos es significativo.[8] Al no existir la necesidad de mantener un acervo mínimo de divisas extranjeras, la Banca Central de esas economías puede dedicarse a

[8] De hecho, en esas economías la direccionalidad del vínculo entre la tasa de interés y el tipo de cambio se invierte (Mata y Levy, 2007).

acomodar elásticamente la demanda de reservas en moneda local.[9] En ese caso, tanto el dinero base como el crédito privado interno fungen como medio de pago internacional. De allí que las autoridades monetarias de las economías emisoras disfruten de un mayor grado de control sobre la tasa de interés.

Los postulados anteriores, tanto en el caso de las economías emisoras como receptoras de reservas, son completamente consistentes con la teoría del dinero endógeno, pues en ambos casos es la Banca Central, y no el mercado, el encargado de fijar la tasa de interés. Sin embargo, consideramos que la teoría endógena del dinero deberá en el futuro abarcar y profundizar el estudio del papel de las asimetrías monetarias internacionales, puesto que el hecho de que una economía emita o no una moneda de reserva internacional condiciona sustancialmente el proceso de fijación de la tasa de interés[10] (véase el diagrama 2).

Hojas de balance e indicadores cuantitativos de los bancos centrales

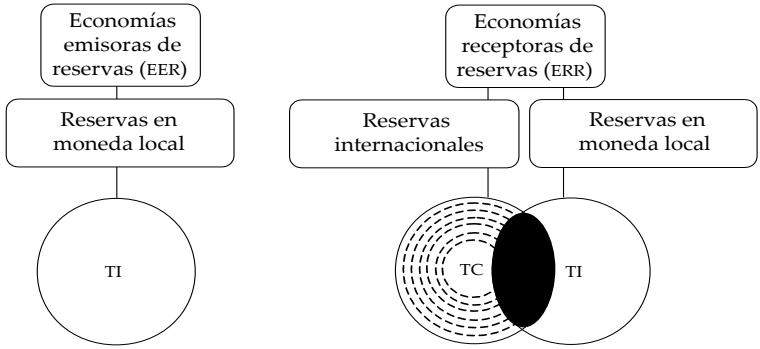
En lo sucesivo sostendremos que la estructura de activos y pasivos de la Banca Central refleja mayor información que lo que se piensa. Muestra las asimetrías del sistema monetario internacional, la estructura y marco institucional de la economía nacional y el régimen cambiario *de facto*. Pero, también, refleja la política monetaria de la Banca Central y el grado de inyección y extracción de componentes exógenos monetarios.

Sin embargo, dado que la demanda de dinero no es observable directamente, puede ser el caso que algunas inferencias del estudio del balance de activos y pasivos de la Banca Central no necesariamente sean concluyentes

[9] Aunque en esas economías pueda existir un acervo de divisas, tal acervo no es ni necesario ni grande. La excepción, claro está, es el caso de las EERS-3° como Japón y Reino Unido.

[10] Más aún, la teoría del dinero endógeno debería tomar en cuenta el *miedo a flotar* (Calvo y Reinhart, 2000), ya que, como sugieren los datos empíricos, cuando los bancos centrales se preocupan por la estabilidad del tipo de cambio, la estructura de sus activos y pasivos es sometida a presión y el grado de exogeneidad de la tasa de interés se ve reducida.

Diagrama **2**
Asimetrías monetarias internacionales y el vínculo entre la tasa de interés (TI) y el tipo de cambio (TC)



El área sombreada representa la intersección de dos esferas dentro del mercado monetario de las ERRs. Ella persiste debido a la coexistencia de dos formas de reservas monetarias, pero el tamaño de la intersección depende de la estructura de la economía nacional y del *miedo a flotar*. Mientras menor sea el acervo de divisas de la Banca Central más flexible será el régimen cambiario y más exógena la tasa de interés. Este resultado es consistente con la *teoría del preajuste financiero* (Mata, 1999) la cual plantea que las condiciones *ex-post* de los mercados reales están definidas por las condiciones *ex-ante* de los mercados financieros, de forma tal que los ajustes de portafolio establecen el equilibrio entre la *TI* y el *TC*.

por sí mismas, requiriendo la observación simultánea del nivel, variación y volatilidad de variables-precio claves tales como la tasa de interés, el tipo de cambio y la tasa de inflación. No obstante, usando esos datos complementarios, se demostrará que el análisis de *ratios* y mezclas de activos y pasivos de la Banca Central es crucial a la hora de detectar diversas prácticas monetarias a nivel mundial. Previo a la introducción de tales ratios, la próxima subsección analizará las particularidades de la hoja de balance de los bancos centrales.

Activos y pasivos de la Banca Central

La tabla 2 propone una clasificación sencilla del balance de la Banca Central. En primer lugar, un incremento (disminución) en cualquier componente

del activo es registrado como una operación de inyección (extracción) de la base monetaria.[11]

Tabla 2
El balance de la Banca Central

Activo, pasivo y capital	**Activo, pasivo y capital**
Activo	*Pasivo*
Reservas internacionales brutas (*RIB*)	Pasivos de reserva internacional (*PRI*)
Oro y certificados de oro	Asistencias del FMI y otros
Activos en divisas extranjeras	Base monetaria (*BM* = *EFE* + *RESB*)
Otros Activos de reserva internacional	Efectivo (*EFE*)
Crédito interno (*CD* = *CG* + *CSF*)	Depósitos instituciones financieras (*RESB*)
Crédito al gobierno (*CG*)	Títulos de deuda propios (*TD*)
Crédito al sistema financiero (*CSF*)	Depósitos administración pública (*DG*)
Asistencias del Fondo Monetario Internacional (FMI) y otros	Otros pasivos
Subtotal otros activos	Total pasivo
Otros activos en divisas no *RIB*	*Capital*
Otros activos	Capital (*K*)
Total activo	

En segundo lugar, el lado del pasivo refleja múltiples operaciones. Así, aunque en primera instancia registra variaciones en el efectivo y las reservas bancarias de la base monetaria, también registra todas las operaciones que

[11] Por ejemplo, el efecto directo de un aumento en las reservas internacionales brutas es un incremento equivalente de la base monetaria, ya sea registrado por el aumento del subcomponente efectivo o del subcomponente reservas bancarias. Igualmente ocurre en el caso de un incremento del crédito interno, ya sea a través del canal exógeno de crédito al sector público o del canal endógeno de crédito al sector financiero. Sin embargo, no ocurre lo mismo en el caso de asistencias financieras del Fondo Monetario Internacional (FMI) o de cualquier otra institución del sistema internacional: en ese caso, el incremento del activo podría venir acompañado del lado del pasivo por un aumento en los depósitos del gobierno en vez de en la base monetaria; ello con el propósito de garantizar que la base monetaria se vea incrementada una vez que los fondos circulen dentro del sistema bancario privado.

drenan liquidez a través de componentes de extracción, así como también todas aquellas operaciones que afectan el capital de la Banca Central.

Los componentes de extracción del pasivo son: títulos de deuda emitidos por la propia Banca Central, depósitos del gobierno y ajustes (exógenos) de la tasa de requerimientos de reservas. El uso de títulos de deuda propios trae consigo una pérdida de señoreaje, ya que requieren el pago de intereses con el propósito de drenar liquidez, hecho que no sucede con el aumento de la tasa legal de requerimientos de reservas en cuyo caso la disminución de la liquidez se basa en el poder de coerción del Estado. Finalmente, también el aumento de los depósitos del gobierno conduce a un drenaje de liquidez: exógenamente, a través de la colocación de títulos de tesorería o, endógenamente, cuando la recaudación aumenta como resultado del crecimiento de la actividad económica.

La tabla 3 resume el conjunto de variables de control de la Banca Central. En primer lugar, en un sistema cambiario flexible el acervo de reservas internacionales brutas (*RIB*) se encuentra bajo control de la Banca Central precisamente porque el mismo es menor que en el caso de un sistema cambiario fijo. Esto implica que en el primero de los casos la Banca Central no necesita acomodar la demanda de divisas.

Tabla **3**
Variables controladas por la Banca Central

Variable	**Régimen cambiario flexible**		**Régimen cambiario fijo**	
	Cortísimo plazo	*Corto, mediano y largo plazo*	*Cortísimo plazo*	*Corto, mediano y largo plazo*
RIB	Exógeno	Exógeno	Endógeno	Endógeno
CD	Exógeno	Endógeno	Exógeno	Endógeno
PRI	Endógeno	Exógeno	Endógeno	Exógeno
BM	Exógeno	Endógeno	Exógeno	Endógeno
TD	Exógeno	Exógeno	Exógeno	Exógeno
DG	Endógeno	Endógeno	Endógeno	Endógeno
K	Endógeno	Endógeno	Endógeno	Endógeno

Luego, independientemente del régimen cambiario, los pasivos de reserva internacional (*PRI*) sólo pueden ser controlados en el mediano y largo plazo mientras que el crédito interno (*CD*) y la base monetaria (*BM*) se determinan endógenamente.[12] Por otro lado, el acervo de títulos de deuda propios (*TD*) se encuentra siempre bajo control de la Banca Central, puesto que éste siempre puede inyectar liquidez por el lado del activo −comprando títulos del tesoro− y extraerla nuevamente por el lado del pasivo, pagando una tasa de interés superior a la de tesorería. Finalmente, el capital (*K*) de la Banca Central funciona como un amortiguador que permite absorber las pérdidas y ganancias de la política monetaria, de forma tal que disminuciones fuertes en *K* representan el preludio de una depreciación monetaria destinada a restituir un mínimo de flexibilidad.

En términos formales, dejando a un lado el conglomerado de otros activos y otros pasivos, suponiendo que ambos se cancelan entre sí, el balance de activos y pasivos de la Banca Central conduce a la siguiente ecuación de identidad:

$$RIB + CD = PRI + BM + TD + DG + K \qquad [1]$$

A partir de [1], *BM* se puede expresar como:[13]

$$BM = [(RIB - PRI) + (CD - TD - DG)] - K \qquad [1']$$

Para evitar pérdidas abultadas de señoreaje (lo cual ocurre cuando $BM \leq TD$),[14] que podrían colocar presión sobre el nivel y volatilidad de la tasa de

[12] No obstante, el crédito interno (*CD*) y la base monetaria (*BM*) podrían ser manejadas en el cortísimo plazo en contra de la corriente − por ejemplo, durante un par de semanas o algo por el estilo, dependiendo de la estabilidad del sistema de pagos y de los acuerdos institucionales en materia de requerimientos legales de reservas bancarias.

[13] Donde $[(RIB - PRI) + (CD - TD - DG)]$ es el crédito neto, y $(RIB - PRI) = RIN$ son las reservas internacionales netas.

[14] Al definir señoreaje como la capacidad de emitir un pasivo sin tener que pagar por ello una tasa de interés pasa a ser evidente que la sustitución de parte de la base monetaria (*BM*) por títulos de deuda propios (*TD*) representa una pérdida neta de señoreaje; ello debido a que los títulos pagan una tasa de interés mientras que la base monetaria no.

interés, el acervo de la base monetaria deberá ser mayor que el acervo de títulos de deuda propios de la Banca Central. Así, la condición $BM > TD$ implica que:

$$BM > (RIB - PRI) + (CD - BM - DG) - K \qquad [2]$$

o equivalentemente:

$$BM > 0.5*[(RIB - PRI) + (CD - DG) - K] \qquad [2']$$

Luego, combinando [1'] y [2'], y despejando TD, se obtiene la siguiente expresión:

$$TD < 0.5*[(RIB - PRI) + (CD - DG) - K] \qquad [3]$$

lo cual implica que un mínimo grado de flexibilidad para la política monetaria requiere el cumplimiento de la siguiente condición:[15]

$$TD \leq 0.5*[(RIB - PRI) + (CD - DG) - K] \leq BM \qquad [4]$$

Estereotipos de Banca Central

La tabla 4 resume todos los posibles estereotipos de Banca Central de acuerdo con su estructura de activos y pasivos (1, 2, …, 6). El caso 1 es aquel de las economías emisoras de reservas, y todos los demás el de las receptoras. Claramente, la libertad que disfruta la Banca Central en la fijación de la tasa de interés disminuye en la medida en que se desciende en la lista.

[15] Obsérvese que esta regla normativa no se deriva de la minimización de una función de pérdida de la Banca Central, debido a que tal función dependería de los objetivos de las autoridades monetarias los cuales, a su vez, dependen de las creencias del banquero central con relación a los alcances de la política monetaria. La función de pérdida del banquero central está condicionada por la teoría económica y, por ende, su optimización no necesariamente conduce a una regla normativa adecuada. Más bien su derivación, la cual queda fuera del alcance de este trabajo, resulta del balance entre las preocupaciones por la estabilidad de la tasa de interés, el tipo de cambio y las reservas internacionales.

Tabla **4**
Estereotipos de Banca Central

Caso	Diagnóstico				Síntomas	
	¿Es la moneda local reserva internacional?	*Asimetrías monetarias internacionales*	*Influencia del tipo de cambio*	*Política monetaria y régimen cambiario*	*Mayor componente del activo*	*Mayor componente del pasivo*
		Efecto cantidad	Efecto precio			
1	Si	Favorable	Nulo	Plenamente flexible	*CD*	Efectivo
2	No	Adverso y poco significativo	Débil	Flexible	*CD*	Toda la base monetaria
3	No	Adverso y significativo	Intermedio	Flexible/Fijo	*CD*	Títulos de deuda y depósitos del gobierno
4	No	Adverso y significativo	Intermedio	Flexible/Fijo	*RIB*	Toda la base monetaria
5	No	Adverso y muy significativo	Fuerte	Fijo	*RIB*	Títulos de deuda y depósitos del gobierno
6	No	Adverso y muy significativo	Fuerte	Plenamente fijo	*RIB*	Efectivo

La razón es que cuando se pasa del caso 1 al 2 la tasa de interés pasa a ser endógena a cambios en el volumen de reservas internacionales debido al efecto cantidad −*e.g.* porque el gobierno debe preservar un acervo mínimo de divisas, una complejidad no presente en el caso 1− y cuando se va pasando del caso 2 al 6, la tasa de interés pasa a ser cada vez más endógena con respecto a variaciones en el tipo de cambio debido al efecto precio cuya intensidad está asociada a la estructura interna de la economía.[16]

Indicadores cuantitativos de la Banca Central

La ratio de dependencia externa

El primer índice que proponemos corresponde a una medida de la fuente externa de liquidez exógena proveniente de los influjos de divisas. Le definimos como la ratio entre la base monetaria y las reservas internacionales brutas (*BM*/*RIB*), y le llamaremos *dependencia externa*. Aplica al caso de los bancos centrales cuyo mayor componente del activo son las *RIB* −*e.g.* en el caso de la mayoría de las economías receptoras de reservas (cuando *RIB*>*CD*).

Dado que el acervo de reservas internacionales de la Banca Central podría construirse plenamente con base en la expansión de la base monetaria, ya sea en forma de efectivo o de reservas bancarias, es de esperar que, para que la política monetaria goce de cierta elasticidad, el valor de esta ratio deba ser mayor o igual a la unidad. Pero, al considerar el hecho de que una parte de tales reservas podría ser financiada con la emisión de títulos de deuda propios en virtud de la presencia del efecto precio y de la necesidad de preservar un nivel mínimo de reservas internacionales, la utilización de la ecuación [4] pasa a ser necesaria en la determinación del valor mínimo para la ratio en cuestión:

[16] Más aún, en regímenes cambiarios rígidos −casos 4 a 6, la exogeneidad de la tasa de interés aumenta con los influjos de divisas y disminuye con sus salidas. Ello se debe a que, bajo la primera circunstancia, la Banca Central siempre puede imprimir base monetaria adicional *pari passu* con los influjos de divisas. Pero, en la segunda, dado que las divisas extranjeras no pueden ser impresas localmente, la Banca Central tarde o temprano perderá el control sobre la tasa de interés, a menos que éste esté dispuesto a dejar flotar el tipo de cambio.

$$(BM/RIB) \geq 0.5*\{[(RIB - PRI) + (CD - DG) - K]/RIB\} \qquad [5]$$

Un incremento en el valor efectivo de esta ratio implica un aumento en la flexibilidad de la política monetaria y del régimen cambiario. Por ello, lo que nos muestra es que para preservar un mínimo de flexibilidad deben mantenerse algunas variables en balance, aun cuando en la práctica se deban tomar en cuenta los efectos de la demanda y la preferencia por la liquidez en divisas y moneda local. Por ejemplo, dado el acervo de reservas internacionales, la expansión exógena y endógena del crédito interno ($\Delta CD - \Delta DG > 0$) requerirá una mayor flexibilidad del régimen cambiario. Esto significa que el valor mínimo deseado de la ratio en cuestión tenderá a aumentar en presencia de expansiones crediticias ($\Delta CSF > 0$) o de déficit fiscales −siempre y cuando éstos no sean plenamente absorbidos por títulos del tesoro–. Pero lo contrario ocurre en el caso de aumentos en el volumen de depósitos del gobierno, pues ello reduce la necesidad de recurrir a la emisión de títulos de deuda propios.[17]

La ratio de autonomía interna

El segundo índice corresponde a una medida de la fuente de liquidez proveniente de la expansión del crédito interno, ya sea a través del canal exógeno de crédito al gobierno o del canal endógeno de crédito al sector financiero. Le definimos como la ratio entre la base monetaria y el crédito interno (BM/CD), denominado *autonomía interna*, y aplicará para el caso en el cual el mayor componente del activo es el crédito interno −*e.g.* en el caso de todas las economías emisoras de reservas. Dado que la expansión del

[17] Adicionalmente, cuando la condición $(CD - DG) < K + PRI$ se cumple, mientras mayor sean las reservas internacionales brutas menor será la ratio requerida para garantizar un mínimo de flexibilidad. Pero si tal condición no se cumple, debe ser el caso que el aumento de las reservas está siendo financiado con la expansión de los títulos de deuda propios, hasta el punto en el cual la flexibilidad se ve plenamente reducida. Finalmente, mientras mayor sea el acervo de capital de la Banca Central, más podrán resistirse las presiones para incrementar la ratio. Pero disminuciones bruscas del mismo señalarían el preludio a una devaluación destinada a recobrar flexibilidad.

crédito interno conduce a la expansión de la base monetaria, es de esperar que el valor de esta ratio permanezca cercano a la unidad. Sin embargo, la ecuación [4] es nuevamente necesaria para determinar su valor mínimo:

$$(BM/CD) \geq 0.5^{*}\{[RIN + (CD - DG) - K]/CD\} \qquad [6]$$

En el caso de bancos centrales emisores de reservas, las reservas internacionales netas y los depósitos del gobierno tienden a ser insignificantes, reduciéndose la ecuación a:

$$BM \geq 0.5[(CD - K)] \qquad [6']$$

una condición sencilla para tales bancos centrales, ya que, en su caso, la base monetaria y el crédito interno tienden a moverse juntos, permaneciendo más o menos iguales.[18]

La importancia de los componentes pasivos de extracción

El tercer índice mide la importancia relativa de dos componentes de extracción: los títulos de deuda propios y los depósitos del gobierno. Le definimos como la ratio entre la suma de los títulos de deuda propios y los depósitos del gobierno sobre la base monetaria [$(TD + DG)/BM$]; es aplicable a cada uno de los casos, implicando una pérdida relativa de elasticidad cuando la misma excede 100 por ciento.

[18] Pero, en los casos 2 y 3 de la tabla 4, los cuales son poco usuales, el nivel de la ratio que garantiza un mínimo de autonomía para la política monetaria nuevamente se verá disminuido por la acumulación de capital y depósitos del gobierno. Obsérvese, sin embargo, que en este caso la acumulación de reservas internacionales incrementa el valor mínimo de la ratio, implicando que para preservar la autonomía interna tales reservas deben ser acumuladas con base en la expansión de la base monetaria y no de títulos de deuda propios. Esto equivale al argumento tradicional que sostiene que la autonomía interna depende de la flexibilidad del régimen cambiario de facto. De hecho, en un régimen cambiario flexible es de esperar que los depósitos del gobierno y los títulos de deuda propios sean relativamente menores y la base monetaria mayor. Pero, nuevamente la flexibilidad dependerá también de la demanda y preferencia por la liquidez en ambas monedas, de la disponibilidad de reservas excedentarias, del volúmen de títulos y del efecto precio.

La ratio de favoritismo ortodoxo

El cuarto índice corresponde a una medida alternativa de la importancia de los componentes pasivos de extracción. Le definimos como la ratio entre la suma de los títulos de deuda propios y los depósitos del gobierno sobre el total del pasivo [(*TD* + *DG*)/*TP*]; es aplicable en todos los casos y su valor deberá ser inferior a 50% pues lo contrario implicaría una tendencia a la desaparición relativa de la base monetaria.

Extracción neta de liquidez interna

El quinto índice corresponde a una medida de la extracción neta de liquidez interna. Le definimos como la ratio entre la suma de los títulos de deuda propios y los depósitos del gobierno sobre el crédito interno [(*TD* + *DG*)/*CD*]; aplica al caso de aquellos bancos centrales cuyo mayor activo es este último componente, y su valor deberá ser inferior a 100% pues lo contrario implicaría un drenaje neto de la base monetaria.

Extracción neta de liquidez externa

El sexto índice corresponde a una medida de la extracción neta de liquidez externa. Le definimos como la ratio entre la suma de los títulos de deuda propios y los depósitos del gobierno sobre las reservas internacionales brutas [(*TD* + *DG*)/*RIB*]; aplica al caso de aquellos bancos centrales cuyo mayor activo son las reservas internacionales −*e.g.* en el caso de las economías receptoras de reservas (*RIB* > *CD*), y su valor debe ser inferior a 100%, de lo contrario los costos del régimen cambiario crecerían rápidamente.

Exigencias de liquidez

El último índice es entre las reservas bancarias y el crédito interno (*RESB*/*CD*) y mide las *exigencias de liquidez* impuestas por la Banca Central; aplica a todos los casos, y valores mayores a 100% implican una menor elasticidad dado el drenaje neto del crédito.

Metodología

Se recolectaron datos del balance de los bancos centrales, incluyendo para cada uno 48 meses de observaciones desde enero de 2003 hasta diciembre de 2006. Tal información fue complementada con datos (*overnight*) relativos a tasas de interés interbancarias y tipos de cambio, con un promedio de 1 045 observaciones diarias para el mismo período. También se incluyeron datos mensuales sobre inflación, reservas, datos fiscales, entre otros (véase la tabla A3 del apéndice).

Los datos y ratios mencionadas fueron calculados para los siguientes casos: para América Latina y Norteamérica: Argentina, Brasil, México, Perú, Estados Unidos y Venezuela ; para Europa: Unión Europea, Reino Unido y Noruega; para Asia: China, Japón, Kuwait, India, Arabia Saudita y los Emiratos Árabes Unidos.

Debido a que el contraste empírico se basa en ecuaciones de identidad y no de comportamiento, el análisis econométrico ha sido descartado, pues ello sólo conduciría a R^2 unitarios y ausencia de errores. No obstante, el interesado en la estadística del vínculo entre la tasa de interés y el tipo de cambio puede remitirse a Mata y Levy (2007).

Hallazgos fundamentales

En lugar de proveer un estudio detallado para cada caso individual −una tarea fuera del alcance de este trabajo− esta sección presenta los resultados empíricos generales. En primer lugar, con relación a los precios financieros, la estabilidad de la tasa de interés interbancaria (*overnight*) sugiere que, durante el período de estudio, la mayoría de los bancos centrales tendieron a acomodar la demanda de reservas de la banca comercial (véase la gráfica A1 del apéndice).[19] Sin embargo, el nivel y la volatilidad de tales tasas fueron menores en las economías emisoras de reservas y en aquellas con los régimes cambiarios fijos más estables, tales como China, Estados Unidos y Arabia Saudita.

[19] La excepción a la regla es el caso de Venezuela que exhibe, para todos los años, la tasa de interés interbancaria (*overnight*) más inestable de toda la muestra. De hecho, el promedio de volatilidad de tal tasa alcanzó cerca de 12% durante 2003, sugiriendo que el Banco Central de Venezuela (BCV) es el

En lo relativo a las estructuras de los balances, todas las economías emisoras de reservas se comportaron tal como se esperaba, es decir de acuerdo con el estereotipo 1. Durante el período, el crédito interno fue el mayor componente del activo, con un promedio de 93, 49, 69 y 94 por ciento en el caso de Estados Unidos, la Unión Europea, el Reino Unido y Japón; mientras que el mayor pasivo fue el efectivo, alcanzando 92, 55, 49 y 55 por ciento, respectivamente.

Obsérvese, sin embargo, que mientras las reservas bancarias son pequeñas en el caso de Estados Unidos (3%), las mismas son relativamente grandes para la Unión Europea (17%), el Reino Unido (27%) y Japón (21%). Para el último caso, el monto de los títulos de deuda propios de la Banca Central alcanzó 17%; éste fue poco significativo para Estados Unidos, el Reino Unido y la Unión Europea.

Sin embargo, los resultados generales confirman que los bancos centrales emisores de reservas, tales como la Reserva Federal, el Banco Central Europeo y en menor medida el Banco de Inglaterra y el Banco de Japón, no se encuentran tan preocupados por la acumulación de divisas. De hecho, las divisas, como parte de las reservas internacionales, sólo alcanzaron 0, 16, 15 y 4 por ciento, respectivamente.[20]

Con relación a las economías receptoras de reservas, los hallazgos se dividen entre bancos centrales que siguieron el estereotipo 4 y aquellos que siguieron el estereotipo 5. El primer grupo está compuesto por Argentina, China, India, Kuwait, México y Perú, y el segundo por casi todas las econo-

único banco de la muestra que persigue una política basada en el control de los agregados monetarios. Un caso adicional, pero transitorio fue Brasil, donde la misma volatilidad promedió un poco más de 2% durante 2003, recuperando estabilidad durante los años posteriores. Aparte del caso venezolano, donde persiste el intento fallido de controlar el volumen de dinero por parte de las autoridades, los resultados generales sugieren la convergencia hacia prácticas monetarias basadas en la fijación de la tasa de interés, tanto en las economías emisoras de reservas como en las receptoras.

20 Debe recordarse, sin embargo, que en el caso de Japón, Reino Unido y Estados Unidos las respectivas tesorerías mantienen un acervo de activos en divisas por separado, el cual es, usualmente, de mayor dimensión que el de sus respectivos bancos centrales. De hecho, para 2006, el promedio de las reservas oficiales mantenidas por la tesorería y la Reserva Federal de Estados Unidos alcanzó 66 mil millones de dólares, de los cuales sólo 14 eran mantenidos por la Reserva Federal. Igualmente, en el caso de Japón, el total de las reservas oficiales alcanzaron 870 mil millones de dólares, de los cuales sólo 48 mil millones eran mantenidos por el Banco de Japón. Y, en el caso de Reino Unido, de 79 mil millones de dólares, sólo 30 mil millones se encontraban en poder del Banco de Inglaterra.

mías petroleras de la muestra: Noruega, Emiratos Árabes Unidos, Arabia Saudita y Venezuela. Como se esperaba, el mayor componente del activo en ambos casos fueron las reservas internacionales, con 61,[21] 56, 86, 98, 74, 89, 95,[22] 92, 98 y 78 por ciento en el caso de Argentina, China, India, Kuwait, México, Perú, Noruega, Arabia Saudita, Emiratos Árabes Unidos y Venezuela, respectivamente.

Sin embargo, en concordancia con la tabla 3, la estructura del pasivo es distinta para ambos grupos. Así, mientras la base monetaria es el mayor componente en el primer grupo, la sumatoria de los títulos de deuda propios y los depósitos del gobierno es el mayor en el segundo. De hecho, para el primer grupo, el total de la base monetaria alcanzó 39, 66, 71, 54, 52 y 70[23] por ciento en el caso de Argentina, China, India, Kuwait, México y Perú respectivamente; mientras que, para el segundo, la sumatoria de los títulos de deuda propios y los depósitos del gobierno representó 89,[24] 32,[25] 42 y 42 por ciento en el caso de Noruega, Arabia Saudita, Emiratos Árabes Unidos y Venezuela, respectivamente.

---

21 En el caso de Argentina, el valor relevante es el resultante de la suma de las reservas internacionales brutas (39%) y de las asistencias del FMI (22%), ya que estas últimas representan reservas registradas por separado. Véase la tabla A2 del apéndice, la cual refleja el crecimiento de las reservas internacionales desde 30% en 2003 a 50% en 2006.

22 Igualmente, en el caso de Noruega, el valor relevante es el que corresponde a la sumatoria de las reservas internacionales brutas (20%) y el monto de los activos acumulados en el Fondo Petrolero (75%), donde este último representa también un acervo de recursos en divisas, el cual, aunque no esté monetizado, se encuentra registrado por separado.

23 El valor relevante para el caso del Perú viene dado por la suma de la base monetaria (25%) y las reservas bancarias en divisas (45%). Esto se debe a la presencia de un proceso de dolarización financiera dentro de dicha economía, lo cual implica que un gran componente de la base monetaria está representado por reservas bancarias denominadas en divisas, aquí registradas por separado. Tal concepto alcanzó 45% del pasivo durante el período, lo cual implica que alrededor de 50% del acervo de reservas internacionales brutas del Banco Central de Reserva del Perú se basa en la imposición de requerimientos de reservas bancarias en divisas ($0.50 = 0.45 * 0.99 \div 0.89$).

24 La razón es que los activos acumulados dentro del Fondo Petrolero son considerados como una suerte de depósito del gobierno, ya que tal fondo es administrado por la Banca Central, pero pertenece al Estado.

25 En el caso de Arabia Saudita, 44% del pasivo durante el período estuvo representado por otros pasivos misceláneos. Sería interesante conocer su composición pero ningún reporte de la página *web* de la Agencia Monetaria Saudita (SAMA) menciona algo al respecto, y para el momento de redacción de este trabajo ningún departamento del banco ha respondido a nuestras inquietudes en esta materia.

El caso de Brasil representa un resultado inesperado, puesto que, para el mismo, la estructura de activos y pasivos de la Banca Central exhibe, en primer lugar, al crédito interno como mayor componente del activo (65%) y, en segundo, a la sumatoria de los títulos de deuda propios y los depósitos del gobierno como el mayor componente del pasivo (53%). Esto podría estar reflejando una situación temporal caracterizada por una política ortodoxa destinada a la reducción y reestructuración de la deuda gubernamental.[26]

Con respecto a las ratios, los valores presentan evidencia de alta elasticidad en el caso de los sistemas monetarios y regímenes cambiarios de las economías emisoras de reservas y de baja flexibilidad en el caso de las economías receptoras (véanse las gráficas A9, A10 y A11 del apéndice).

Finalmente, la evolución de los datos a lo largo del período analizado confirma que las estructuras de los balances de la Banca Central se mantienen estables durante el ciclo económico, dado que ninguna economía puede saltar de una posición extrema a otra; esto es, ninguna Banca Central receptora de reservas −estereotipos 2 a 6− puede pasar repentinamente a comportarse como uno emisor −estereotipo 1−. No obstante, los ajustes de portafolio y del tipo de cambio dentro de un mismo estereotipo pueden aumentar o reducir la flexibilidad del sistema monetario (y cambiario) en el corto plazo.

Una cosa sí es cierta, tal concepto debe incluir el capital del banco, pero sobre todo debe incluir lo que SAMA denomina en otros espacios como reverse repos (o en nuestra terminología: títulos de deuda propios). Por tanto, es muy probable que la suma de los componentes de extracción de liquidez (títulos de deuda propios y depósitos del gobierno) exceda 32% en el caso de SAMA. Por ejemplo, si suponemos que la mitad de ese 44% son títulos de deuda propios, entonces la suma de los componentes de extracción sería 54% en vez de 32% y, por ende, representaría el mayor esfuerzo de extracción de liquidez de toda la muestra. Ciertamente, tal número tiene sentido si consideramos que ello refleja una historia caracterizada por 25 años ininterrumpidos (hasta ahora) de tipo de cambio fijo entre el rial y los derechos especiales de giro (hasta 1981) y, posteriormente, hasta fecha presente, entre el rial y el dólar estadounidense.

[26] Según lo publicado por el Banco Central de Brasil, los superávit fiscales primarios como porcentaje del Producto Interno Bruto (PIB) alcanzaron 4.27, 4.38, 4.37 y 4.32 por ciento al cierre de 2003, 2004, 2005 y 2006, respectivamente. Sin embargo, los resultados financieros, luego de incluir el servicio de la deuda, condujeron a déficit respectivos de 5.09, 2.55, 3.98 y 3.35 por ciento. Los mismos fueron más que cubiertos por la emisión interna de títulos de tesorería, alcanzando alrededor de 7.92, 3.70, 8.83, y 7.43 por ciento del PIB. De hecho, tal emisión permitió una reestructuración, reduciendo la deuda interna bancaria y la deuda externa general al costo de aumentar la deuda interna titularizada.

Conclusiones

Este trabajo formuló tres preguntas en la Introducción.[27] En respuesta a la primera, se demostró que los bancos centrales receptores de reservas deben preocuparse no sólo por la estabilidad de la tasa de interés −como sucede con los bancos centrales emisores− sino también por la acumulación de reservas en divisas y la estabilidad del tipo de cambio. Más aún, se demostró que las asimetrías monetarias internacionales son la *raison d'être* de tales diferencias.

Se sostuvo que después de la Segunda Guerra Mundial el mundo quedó dividido entre economías emisoras y receptoras de reservas, dejando a las últimas expuestas a los efectos cantidad y precio derivados de tales asimetrías. El primer efecto implica que en las economías receptoras existe un fuerte nexo de oferta entre el volumen de las reservas internacionales y la tasa de interés de corto plazo, puesto que en ese caso las autoridades deben preocuparse por la preservación de un acervo mínimo de divisas. La razón es que esas economías no pueden usar ni el crédito interno privado ni el dinero base del Estado para los pagos internacionales, debido a que la moneda local no circula en el exterior.

El segundo efecto se deriva del primero; es decir, del hecho de que en las economías receptoras coexistan dos formas de reservas: las reservas (de base monetaria) en moneda local potencialmente ilimitadas y las reservas en divisas, siempre escasas. El precio de las primeras es la tasa de interés y el de las segundas el tipo de cambio. Tal efecto implica que en las economías receptoras existe también una fuerte conexión de oferta entre el tipo de cambio y la tasa de interés, debido a que el control sobre esta última variable se reduce en la medida en que las autoridades se preocupan más por las fluctuaciones del tipo de cambio.

Ambos efectos se encuentran minimizados en el caso de las economías emisoras en las cuales no existe la necesidad de acumular un acervo mínimo

[27] i) ¿cuáles son las diferencias entre las prácticas monetarias de las distintas economías y a qué se deben?; ii) ¿cómo se relacionan las mismas con las teorías del dinero?; iii) ¿cómo pueden observarse tales diferencias, y cuáles países tienden a seguir patrones similares?

de reservas en divisas. Por esa razón, en esas economías la conexión entre la tasa de interés de corto plazo, las reservas internacionales y el tipo de cambio tiende a ser poco significativa. En pocas palabras, los bancos centrales de las economías emisoras disfrutan del mayor grado de exogeneidad posible a la hora de fijar la tasa de interés de corto plazo, habida cuenta de las menores preocupaciones por los efectos reales de las fluctuaciones cambiarias.

De esta forma queda clara la respuesta a la segunda pregunta. Aun cuando la oferta de crédito privado es endógena tanto en las economías emisoras como en las receptoras, la evidencia empírica sugiere que mientras en las primeras las prácticas monetarias se ajustan al enfoque horizontalista, en las segundas se ajustan al estructuralista. La razón es que, en las economías receptoras, la elasticidad monetaria −*e.g.* el grado de exogeneidad de la tasa de interés− es menor dada la dependencia de las reservas extranjeras.

Con respecto a la última pregunta, las diferencias entre las prácticas monetarias de las distintas economías se aprecian fácilmente al observar las distintas estructuras de activos y pasivos de los bancos centrales. Se demostró que la preocupación por la estabilidad cambiaria conduce a que los bancos centrales receptores substituyan parcialmente el crédito interno por reservas internacionales, y la base monetaria por títulos de deuda propios, depósitos del gobierno y ajustes en la tasa legal de requerimientos de reservas bancarias. Por ello, el esfuerzo para estabilizar el tipo de cambio se observa a través de la conformación de una estructura de activos y pasivos muy particular en vez de a través de la observación directa de las fluctuaciones del tipo de cambio.[28]

Más aún, se demostró que las EERS siguen un patrón totalmente distinto al de las ERRS. Mientras las primeras se comportan según el estereotipo 1, con crédito interno y efectivo como mayores componentes del activo y pasivo, las últimas se comportan según el estereotipo 4, con reservas internacionales

[28] El proceso de sustitución anteriormente mencionado involucra un aumento en el monto correspondiente a los componentes de extracción de liquidez tales como títulos de deuda propios, los cuales implican el pago de una tasa de interés por parte de la Banca Central y, por ende, la reducción del señoreaje. Precisamente, este último costo es minimizado en el caso de las economías emisoras donde la base monetaria en forma de efectivo es máxima debido a la escasa necesidad de mantener altos volúmenes de reservas bancarias y títulos de deuda propios.

y base monetaria como mayores componentes. La excepción es el caso de ciertas economías exportadoras de petróleo, las cuales, debido a sus regímenes cambiarios fijos, tienden a seguir el estereotipo 5. Sin embargo, es de esperar que, en general, los estereotipos 1 y 4 representen la regla para las economías emisoras y receptoras, respectivamente.

Con el propósito de garantizar un nivel mínimo de reservas internacionales, es también de esperar que las economías receptoras se guíen por criterios de *finanzas saludables* tales como la preservación de altos volúmenes de reservas bancarias, un elemento captado concretamente por la ratio de exigencias de liquidez (véase la gráfica A11 del apéndice).[29]

En resumen, se infiere que la política monetaria es más flexible pero menos influyente en economías emisoras de reservas, y a la vez menos flexible pero más influyente en las economías receptoras. Ello se debe a que estas últimas, a diferencia de las emisoras, se ven obligadas a acumular divisas y a procurar la estabilidad del tipo de cambio, debido a que sus monedas locales no circulan en el exterior. Por ello, aunque la oferta crediticia es endógena en las economías receptoras, éstas no han sido capaces de librarse aún de la necesidad de mantener reservas en divisas extranjeras.

Referencias

Arestis, P., *The Post-Keynesian Approach to Economics: An Alternative Analysis of Economic Theory and Policy*, Aldershot, Edward Elgar, 1992.

Bernacer, G., "La teoría de las disponibilidades como interpretación de las crisis económicas y del problema social", *Revista Nacional de Economía*, núm. 40, 1922, pp. 535-562.

[29] Los valores de la ratio reflejan prácticas monetarias más saludables en el caso de las ERRS que en el de las EERS. Pero esto, en vez de ser un mérito de las autoridades, lo que refleja es una menor elasticidad monetaria en las primeras dada la preocupación por la preservación de un nivel adecuado de divisas y por la estabilidad del tipo de cambio. Aparte del caso brasileño, los resultados sugieren que las autoridades de las ERRS prefieren regímenes cambiarios menos flexibles, un hallazgo contrario al principio tradicional de la flexibilidad de precios. Más aún los resultados son evidencia de una contradicción entre dos principios ortodoxos, ya que la estabilidad de precios y las políticas de finanzas saludables no pueden coexistir toda vez que ningún régimen cambiario puede ser flexible en un contexto de prácticas saludables de la Banca Central.

Calvo, G. y C. Reinhart, "Fear of Floating", National Bureau of Economic Research (NBER) Papel de Trabajo no. 7993, 2000.

Davidson, P., *Money and the Real World*, Nueva York, Halstead Press, 1972.

Friedman, M., *Studies in the Quantity Theory of Money*, Chicago, University Chicago Press, 1956.

Fullwiler, S., "Setting Interest Rates in the Modern Money Era", *Journal of Post Keynesian Economics*, vol. 28, núm. 3, 2006, pp. 496-525.

Kaldor, N., *The Scourge of Monetarism*, Oxford, Oxford University Press, 1982.

Keynes, J.M., *A Treatise on Money*, Londres, Macmillan, 1930.

———, *The General Theory of Employment, Interest and Money*, Nueva York, Harcourt, Brace and Howe, 1936.

Knapp, G. F., *Staatliche Theorie des Geldes*, 1ra ed. [*State Theory of Money*], Leipzig, Duncker & Humblot, 1905.

Lavoie, M., *Foundations of Post Keynesian Economic Analysis*, Aldershot, Edward Elgar, 1992.

Lerner, A.P., "Functional Finance and the Federal Debt", *Social Research*, núm. 10, 1943, pp. 38-51.

Mata, L., "Essay on the New Economics Synthesis and Financial Hegemony: Policy Consequences", en Shri Bhagwan Dahiya (ed.), *Current State of Economic Science*, Rothak, Spellbound Publications Ltd., vol. 3, 1999, pp. 1607-1635.

Mata, L. y S. Levy-Carciente, "Dinámica financiera global: teoría y política para economías pequeñas y abiertas", *Investigación Económica*, vol. LXVI, núm. 260, abril-junio de 2007, pp. 151-190.

Minsky, H., "Central Banking and Money Market Changes", *Quarterly Journal of Economics*, vol. 71, 1957, pp. 171-187.

Moore, B., "The Endogenous Money Supply", *Journal of Post Keynesian Economics*, vol. 10, núm. 3, 1988, pp. 372-385.

Nell, E., *The General Theory of Transformational Growth: Keynes After Sraffa*, Cambridge, Cambridge University Press, 1998.

Robertson, D., *Dinero*, México, Fondo de Cultura Económica (FCE), 1955(1922).

Rochon L. P., "Cambridge's Contribution to Endogenous Money: Robinson and Kahn on Credit and Money", *Review of Political Economy*, vol. 13 (3), 2001, pp. 287-307.

Wicksell, K., *Geldzins und Guterpreise*, Jena, G. Fischer Verlag, 1898 (publicado en ingles como *Interest and Prices*, Londres, Macmillan, 1934).

Wray, R., "When Are Interest Rates Exogenous?", Center for Full Employment and Price Stability Documento de Trabajo no. 30, 2004.

Apéndice

Tabla A1
Estructura promedio del balance mensual de los bancos centrales
(todos los países, enero 2003 a diciembre 2006; porcentajes)

Activo, pasivo y capital	ARG	BRA	MEX	PER	EU	VEN	RU	UE	NOR	CHI	JAP	KUW	IND	ASAU	EAU
Activo															
Reservas internacionales brutas (*RIB*)	39	32	74	89	2	78	20	34	20	56	4	98	86	92	98
Oro y certificados de oro	1	0	0	4	1	17	0	15	0	0	0	1	3	0	0
Activos en divisas extranjeras	38	32	73	83	0	60	15	16	19	56	4	97	83	92	98
Otros activos de reserva internacional	0	0	1	2	0	2	4	3	0	0	0	0	0	0	0
Crédito interno (*CD=CG+CSF*)	29	65	19	1	93	7	69	49	2	31	94	0	3	0	1
Crédito al gobierno (*CG*)	17	61	11	0	92	7	22	5	1	4	92	0	2	0	0
Crédito al sistema financiero (*CSF*)	12	4	7	1	0	0	48	45	1	27	2	0	1	0	1
Asistencias del FMI (y otros recursos de otros fondos)	22	0	0	0	0	0	0	0	75	0	0	0	0	0	0
Subtotal otros activos	9	3	7	10	6	16	11	17	3	13	2	2	12	8	1
Otros activos en divisas no considerados *RIB*	4	2	1	7	0	14	0	2	0	1	0	0	0	0	0
Otros Activos	6	1	6	3	6	2	11	15	3	11	2	2	12	8	1
Total activo															

Tabla **A1, continuación...**

Activo, pasivo y capital	ARG	BRA	MEX	PER	EU	VEN	RU	UE	NOR	CHI	JAP	KUW	IND	ASAU	EAU
Pasivo															
Pasivos de reserva internacional (*PRI*)	4	7	5	9	0	21	19	2	5	1	0	2	0	0	0
Asistencias del FMI (y otros, incluidas las Reservas Bancarias en divisas)	28	10	0	45	0	0	0	0	81	0	0	0	0	0	0
Base Monetaria (*BM* = *EFE* + *RESB*)	39	29	52	25	95	34	76	72	6	66	76	54	71	24	56
Efectivo (*EFE*)	28	11	30	18	92	14	49	55	3	29	55	29	55	18	27
Depósitos de instituciones financieras (*RESB*)	11	18	22	6	3	19	27	17	2	37	21	26	16	6	29
Títulos de deuda propios (*TD*)	17	19	23	13	3	27	1	0	0	14	17	4	5	0	27
Depósitos de la administración pública (*DG*)	1	34	15	2	1	15	1	7	8	14	4	25	1	32	15
Otros pasivos	10	1	5	6	1	4	3	19	0	5	3	15	23	44	3
Total pasivo	88	99	103	99	97	77	100	93	93	100	98	91	100	100	98
Capital															
Capital (*K*)	12	1	–3	1	3	22	0	7	7	0	2	9	0	0	2
Estereotipo de Banca Central 1, 2, …, 6	4	3	4	4	1	5	1	1	5	4	1	4	4	5	4

Nota: ARG: Argentina, BRA: Brasil, MEX: México, PER: Perú, EU: Estados Unidos, VEN: Venezuela, RU: Reino Unido, UE: Unión Europea, NOR: Noruega; CHI: China; JAP: Japón; KUW: Kuwait; IND: India; ASAU: Arabia Saudita; EAU: Emiratos Árabes Unidos.

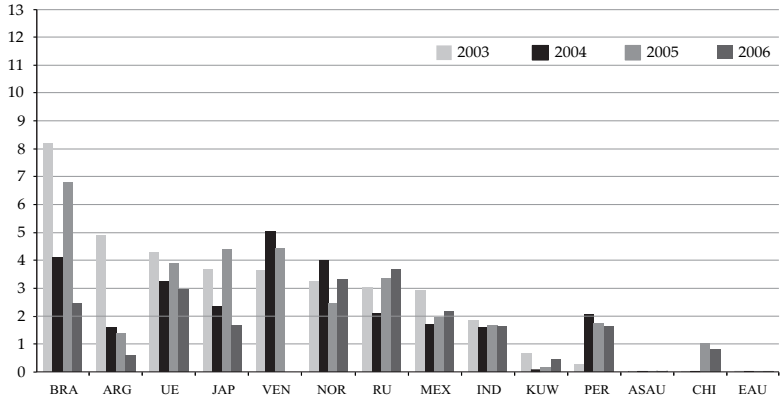
Tabla **A2**
Evolución de algunas variables clave del promedio de 2003 al promedio de 2006
(todos los países, porcentajes)

Activo, pasivo y capital	ARG	BRA	MEX	PER	EU
Activo					
Reservas internacionales brutas (*RIB*)	30-50	32-32	70-77	87-89	2-2
Crédito interno (*CD=CG+CSF*)	26-39	64-66	22-19	1-3	92-93
Asistencias del FMI (y Fondo Petrolero Noruego)	37-0				
Pasivo					
FMI (Reservas bancarias en divisas del Perú y Fondo Petrolero Noruego)	46-3	17-0		29-25	
Base monetaria (*BM =EFE+RESB*)	36-49	24-35	51-54	18-30	95-95
Efectivo (*EFE*)	22-38	8-14	29-30	16-21	92-93
Depósitos de instituciones financieras (*RESB*)	13-11	16-22	22-24	2-10	3-2
Títulos de deuda propios (*TD*)	6-30	22-19	27-18	8-11	3-3
Depósitos de la administración pública (*DG*)	1-2	27-40	14-17	26-20	1-1
Tipo de cambio					
Variación del tipo de cambio (con respecto al dólar estadounidense)	2.95 3.07	3.07 2.18	10.79 10.90	3.48 3.28	NA
Variación porcentual del tipo de cambio	4.07	–28.99	1.02	–5.75	NA
Estereotipo de Banca Central 1, 2, …, 6	4	3	4	4	1

Nota: 1/ NA: no aplica.

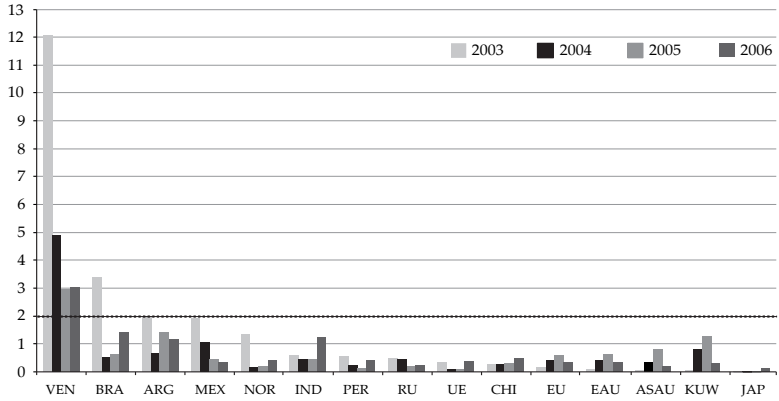
VEN	RU	UE	NOR	CHI	JAP	KUW	IND	ASAU	EAU
74-74	19-19	41-29	22-16	48-63	4-4	99-98	78-89	88-96	99-97
6-14	69-70	42-51	2-2	40-26	94-93	0-1	8-1	0-0	0-2
			68-82						
			76-85						
34-36	80-67	68-72	8-4	67-56	79-75	66-50	73-72	34-14	55-55
17-13	54-42	51-56	4-3	35-23	55-62	27-25	58-55	27-10	29-24
17-23	26-25	18-16	4-1	32-33	23-13	38-26	15-17	7-5	26-30
18-42	0-4	0-0	0-0	4-24	14-19	0-10	0-4	0-0	24-32
14-7	1-1	8-6	8-6	25-11	5-4	21-22	0-2	29-42	19-11
1 607.60	0.61	0.89	7.08	8.28	115.93	0.30	46.56	3.75	3.67
2 150.00	0.54	0.80	6.42	7.97	116.29	0.29	45.42	3.75	3.67
33.74	–11.48	–10.11	–9.32	–3.68	0.31	–2.63	–2.45	0	0
5	1	1	5	4	1	4	4	5	4

Gráfica **A1**
Volatilidad promedio de la tasa de interés diaria interbancaria
(todos los países, porcentajes)



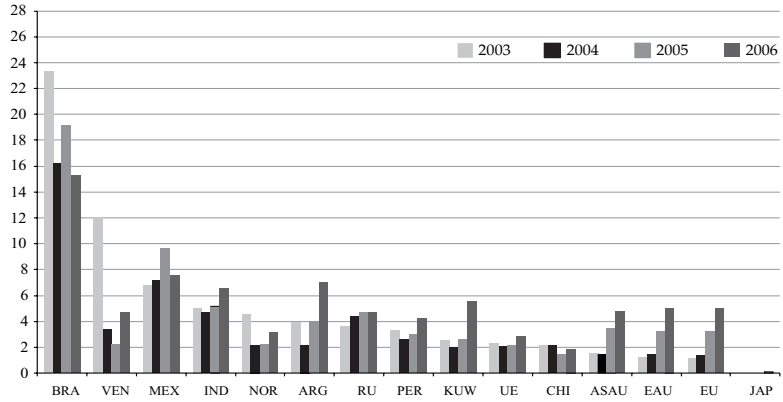
Nota: en EAU y ASAU el valor corresponde al promedio de la volatilidad mensual, ya que los datos no estaban disponibles. En China las tasas de interés están reguladas.

Gráfica **A2**
Volatilidad promedio del tipo de cambio diario interbancario sobre la media anual
(todos los países, porcentajes)



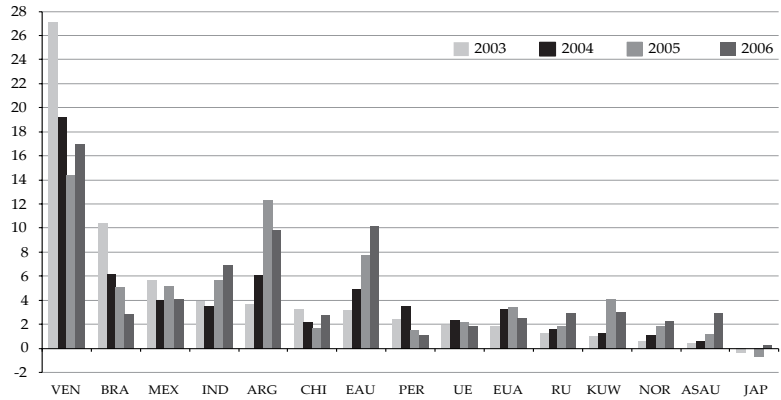
Nota: donde falte una columna es porque el tipo de cambio permanecio fijo durante el año.

Gráfica **A3**
Tasa de interés promedio del mercado interbancario
(todos los países, porcentajes)



Nota: en asau y eau el valor correspondeal promedio de la volatilidad mensual, ya que los datos diarios no estaban disponibles. En China las tasasde interés están reguladas.

Gráfica **A4**
Tasa anualizada de inflación del Índice de Precios al Consumidor (ipc)
(todos los países, porcentajes)



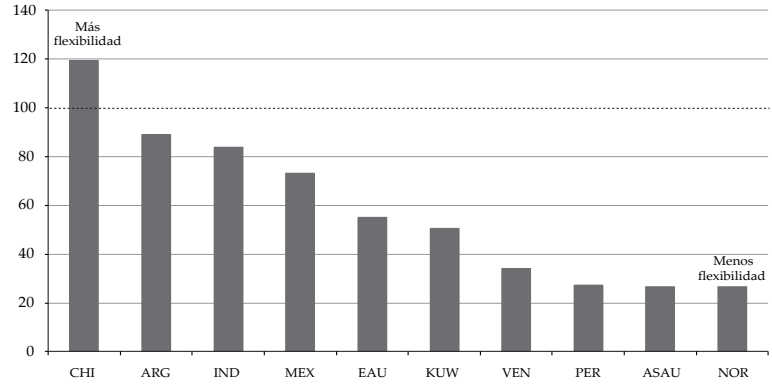
Nota: en asau el valor corresponde a la tasa de inflación del índice del costo de vida.

Tabla **A3**
Ratios promedio y flexibilidad de la política monetaria, 2003-2006
(todos los países, porcentajes)

Ratio	*ARG*	*BRA*	*MEX*	*PER*	*EU*	*VEN*	*RU*	*UE*	*NOR*	*CHI*	*JAP*	*KUW*	*IND*	*ASAU*	*EAU*
Dependencia externa (*BM/RIB*)	89	…	73	27	…	34	…	…	26	119	…	51	84	27	55
BM > 0.5*[*RIN* +*CD* – *DG* – *K*]		NA			NA		NA	NA			NA			√	
Autonomía interna (*BM* /*CD*)	…	44	…	…	100	…	110	135	…	…	80	…	…	…	…
BM > 0.5*[*RIN* +*CD* – *DG* – *K*]	NA		NA	NA		NA			NA	NA		NA	NA	NA	NA
Importancia de los componentes de extracción	45	187	74	62	4	126	3	10	156	45	28	57	8	158	75
(*TD* + *DG*)/*BM* < 1		√				√			√					√	
Favoritismo ortodoxo	18	53	38	15	4	42	2	7	8	28	21	29	6	32	42
(*TD* + *DG*) < 0.5 *PAS*		√													
Extracción neta de liquidez externa	39	…	54	17	…	42	…	…	38	50	…	27	6	35	41
(TD + DG) < RIB		NA			NA		NA	NA			NA				
Extracción neta de liquidez interna	…	81	…	…	4	…	3	14	…	…	22	…	…	…	…
(TD + DG) < CD	NA		NA	NA		NA			NA	NA		NA	NA	NA	NA
Exigencias de liquidez	37	28	126	329	3	221	39	32	118	121	22	…	…	…	…
BRES < CD			√	√		√			√	√		√	√	√	√
Ratios que evidencian inflexibilidad	—	2/5	1/5	1/5	—	2/5	—	—	2/5	1/5	—	1/5	1/5	3/5	1/5
Evidencia de inflexibilidad √ si ≥ 2/5		√				√			√					√	
Estereotipo Banca Central 1, 2, …, 6	4	3	4	4	1	5	1	1	5	4	1	4	4	5	4

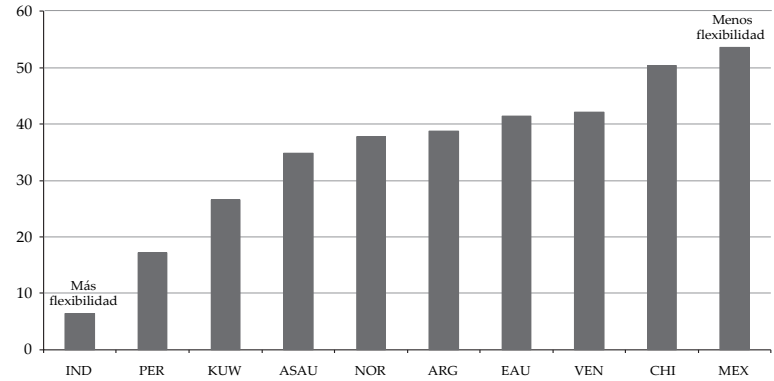
Nota: 1/ NA: no aplica. 2/ "…" implica NA o que la ratio excede 1 000 por ciento.

Gráfica **A5**
Países receptores de reservas (RIB > CD)
ERR-1: promedio de la ratio dependencia externa (BM/RIB)
(enero 2003 a diciembre 2006, porcentajes)



Nota: para el caso de Perú, debe recordarse que la mayor parte de la base monetaria está dolarizada y que, por tanto, la ratio subestima la flexibilidad.

Gráfica **A6**
Países receptores de reservas (RIB > CD)
ERR-2: promedio de la ratio extracción neta de liquidez externa,(TD + DG)/RIB
(enero 2003 a diciembre 2006, porcentajes)



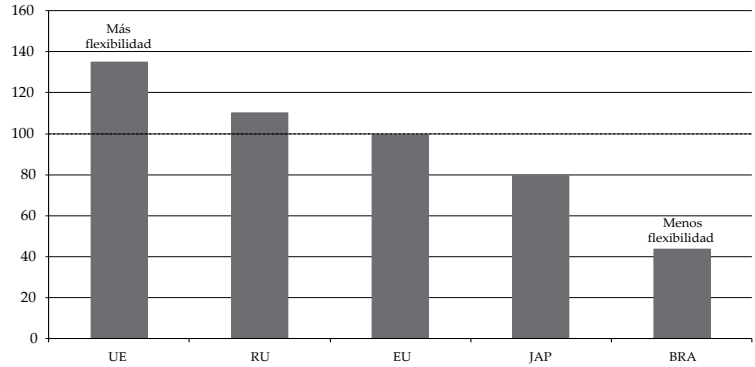
Nota: para el caso de Noruega, los DG no incluyen los depósitos dentro del fondo petrolero, por ello, desde el punto de vista de esta ratio, la flexibilidad monetaria está sobreestimada.

Gráfica **A7**

Países emisores de reservas + Brasil (CD > RIB)

EER-1 + Brasil: promedio de la ratio autonomía interna, BM/DC

(enero 2003 a diciembre 2006, porcentajes)



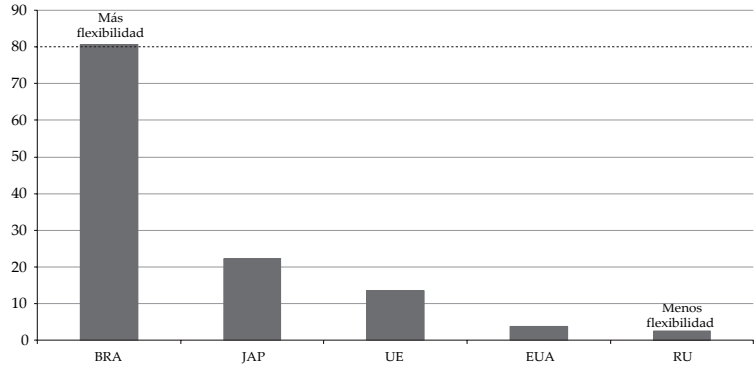
Nota: la ratio para UE y RU excede 100% porque, contrario al caso de EU, parte de la inyección monetaria en estos países está aún basada en la acumulación de divisas por parte de la Banca Central , tarea que corresponde al Ministerio de Finanzas en Japón. Brasil no es una economía emisora de reservas, pero para el período exhibió *CD>RIB*.

Gráfica **A8**

Países emisores de reservas + Brasil (DC > GIR)

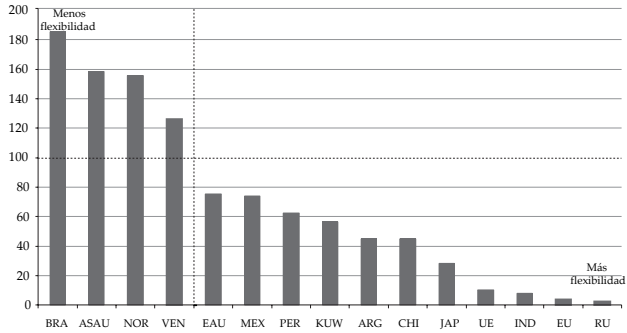
EER-2: promedio de la ratio extracción neta de liquidez interna, (TD + DG)/CD

(enero 2003 a diciembre 2006, porcentajes)

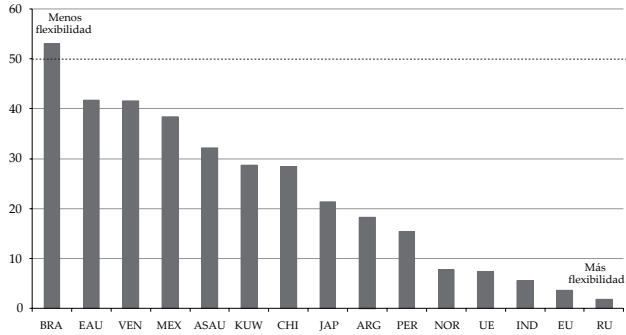


Nota: Brasil no es una economía emisora de reservas, pero para el período exhibió *CD>RIB*.

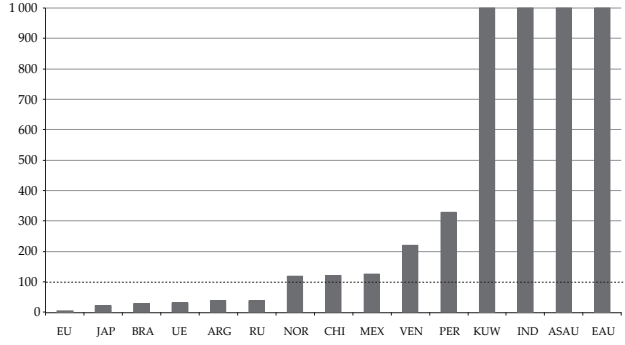
Gráfica **A9**
Promedio de la ratio importancia de los componentes de extracción, (TD + DG)/BM
(todos los países, enero 2003 a diciembre 2006, porcentajes)



Gráfica **A10**
Promedio de la ratio favoritismo ortodoxo, (TD + DG)/PAS
(todos los países, enero 2003 a diciembre 2006, porcentajes)



Gráfica **A11**
Promedio de la ratio exigencias de liquidez, BRES/CD
(todos los países, enero 2003 a diciembre 2006, porcentajes)



Nota: para KUW, IND, ASAU y EAU las ratios exceden 1 000 por ciento.

TABLA **A4**
Descripción de los datos
(todos los países, enero 2003 a diciembre 2006)

País	Variable					Observaciones
	Datos de la hoja de balance 48 meses desde enero 2003 a diciembre 2006	*Datos de tasas de interés* Aproximadamente 1045 observaciones diarias	*Datos dee tipos de cambio* Aproximadamente 1 045 observaciones diarias	*Datos dee tasas de inflación* 48 meses desde enero 2003 a diciembre 2006	*Datos de reservas internacionales brutas* 48 meses desde enero 2003 a diciembre 2006	
ARG	Fuente: Banco Central de Argentina	Tasa de interés *overnight* de Buenos Aires (BAIBOR), *Overnight*-anualizada Fuente: Banco Central de Argentina	ARS /1 USD$, diario Fuente: Banco Central de Argentina	Tasa de inflación del IPC (mensual) 1999=100, Fuente: Instituto Nacional de Estadística y Censos	Tomado de la hoja de balance: activos en divisas divididos por la tasa de cambio media, calculada como el promedio simple de las tasas diarias	Ninguna
BRA	Fuente: Banco do Brasil	Sistema Especial de Pagos y Custodia (SELIC), *Overnight*-anualizada Fuente: Banco Central do Brasil	BRL /1 USD$, diario Fuente: Banco do Brasil	Tasa de inflación del IPC (mensual) 1993=100 Fuente: Instituto Brasileño de Estadística y Geografía (IBGE)	Ídem	Ninguna
MEX	Fuente: Banco de México	Tasa de interés del mercado de dinero (TIIE), *Overnight*-anualizada Fuente: Banco de México	MXN /1 USD$, diario Fuente: Banco de México	Tasa de inflación del IPC (INPC) (mensual) 2002=100 Fuente: Banco de México	Ídem	Ninguna
PER	Fuente: Banco Central de Reserva del Perú. Versión detallada provista por el Departamento de Estadísticas vía correo electrónico.	Tasa de interés *overnight*, *Overnight*-anualizada Fuente: Banco Central de Reserva del Perú	PEN /1 USD$, diario Fuente: Banco Central de Reserva del Perú	Tasa de inflación del IPC (IPC-Lima) (mensual) 2001=100 Fuente: Banco Central de Reserva del Perú	Ídem	Los datos anualizados y detallados de los balances se encuentra disponible en la página *web*. Los datos mensuales fueron provistos previa solicitud. La mayor parte de la base monetaria de la economía está dolarizada en la forma de reservas bancarias.

TABLA **A4, continuación…**

País	Variable					Observaciones
	Datos de la hoja de balance 48 meses desde enero 2003 a diciembre 2006	*Datos de tasas de interés* Aproximadamente 1045 observaciones diarias	*Datos dee tipos de cambio* Aproximadamente 1 045 observaciones diarias	*Datos dee tasas de inflación* 48 meses desde enero 2003 a diciembre 2006	*Datos de reservas internacionales brutas* 48 meses desde enero 2003 a diciembre 2006	
EU	Fuente: Junta de Gobernadores de la Reserva Federal de EU	*Federal Funds Rate*, *Overnight*-anualizada Fuente: Junta de Gobernadores de la Reserva Federal de EU	N/A	Tasa de inflación del IPC-*All Urban Consumers* (mensual), 1982-84=100 Fuente: Departamento del Trabajo de los EU	Ídem	Ninguna
VEN	Fuente: Banco Central de Venezuela	Tasa de interés *overnight*, *Overnight*-anualizada Fuente: Banco Central de Venezuela	VEB /1USD$, diario Fuente: Banco Central de Venezuela	Tasa de inflación del IPC-Caracas (mensual), 1997=100 Fuente: Banco Central de Venezuela	Ídem	Ninguna
RU	Fuente: Banco de Inglaterra	*Daily Sterling Overnight Interbank Average* (SONIA), *Overnight*-anualizada Fuente: Banco de Inglaterra	GBP /1 USD$, diario Fuente: Banco de Inglaterra	Tasa de inflación del IPC (mensual), 200 5=100 Fuente: Oficina de Estadísticas Nacionales	Ídem	La separación entre el Departamento de Emisión y el Departamento Bancario del Banco de Inglaterra requirió la consolidación de la hoja de balance.
UE	Fuente: Banco Central Europeo	*Euro Overnight Index Average* (EUONIA), *Overnight*-anualizada, Fuente: Banco Central Europeo	EUR /1 USD$, diario Fuente: Banco Central Europeo	*Harmonised Index of Consumer Prices* (HICP)-*Overall index* (mensual), 2005=100 Fuente: Eurostat	Ídem	Ninguna
NOR	Fuente: Banco Central de Noruega	*Norwegian InterBank Offered Rate* (NIBOR-T), *Overnight*-anualizada Fuente: Banco Central de Noruega	NOK /1 USD$, diario Fuente: Banco Central de Noruega	*The Norwegian Consumer Price Index* (mensual), 1998=100 Fuente: Statistics Norway	Ídem	Ninguna

TABLA **A4, continuación…**

País	Variable					Observaciones
	Datos de la hoja de balance 48 meses desde enero 2003 a diciembre 2006	*Datos de tasas de interés* Aproximadamente 1045 observaciones diarias	*Datos dee tipos de cambio* Aproximadamente 1 045 observaciones diarias	*Datos dee tasas de inflación* 48 meses desde enero 2003 a diciembre 2006	*Datos de reservas internacionales brutas* 48 meses desde enero 2003 a diciembre 2006	
CHI	Fuente: Banco Popular de China	*China Interbank Offer Rate* (CHIBOR), *Overnight*-anualizada pero regulada Fuente: Bloomberg (CNIBR1D)	CNY /1 USD$, diario Fuente: Bloomberg (CNY)	Tasa de inflación del IPC (mensual), 1996=100 Fuente: National Bureau of Statistics of China y Economist Intelligence Unit	Ídem	Ninguna
JAP	Fuente: Banco del Japón	*Uncollateralized Call Rates*, *Overnight*-anualizada Fuente: Banco del Japón	JPY /1 USD$, diario Fuente: Banco del Japón	Tasa de inflación del IPC (mensual), 2005=100 Fuente: Statistics Bureau (Ministry of Internal Affairs and Communications)	Ídem	Ninguna
KUW	Fuente: Banco Central de Kuwait	*Kuwait Interbank Offered Rate* (KIBOR1M), 1 mes-anualizada Fuente: Bloomberg (KIBOR1M)	KWD /1 USD$, diario Fuente: Bloomberg (KWD)	Tasa de inflación del IPC (mensual), 2000=100 Fuente: Economist Intelligence Unit	Ídem	Ninguna
IND	Fuente: Banco Reserva de la India	*Mumbai Interbank Offer Rate* (MIBOR), *Overnight*-anualizada Fuente: National Stock Exchange of India Ltd	INR /1 USD$, diario Fuente: Banco Reserva de la India	*Consumer Price Index Numbers for Urban Non-manual* (mensual), 1984-1985=100 Fuente: Banco Reserva de la India	Ídem	El Capital del Banco Reserva de la India no se encuentra disponible en la página *web* y, por ende, se encuentra incluida en los balances dentro del concepto otros pasivos

TABLA **A4, continuación…**

País	Variable					Observaciones
	Datos de la hoja de balance 48 meses desde enero 2003 a diciembre 2006	*Datos de tasas de interés* Aproximadamente 1045 observaciones diarias	*Datos dee tipos de cambio* Aproximadamente 1 045 observaciones diarias	*Datos dee tasas de inflación* 48 meses desde enero 2003 a diciembre 2006	*Datos de reservas internacionales brutas* 48 meses desde enero 2003 a diciembre 2006	
ASAU	Fuente: Agencia Monetaria Saudita (cuyas siglas en inglés son SAMA)	*Money Market Rates* de enero 2003 a febrero 2006 y de septiembre 2006 a diciembre 2006, *Overnight*-anualizada, Fuente: Agencia Monetaria Saudita (SAMA) y *Overnight interbank deposit rate* de marzo 2006 a agosto 2006 Fuente: Bloomberg (SRDR1T)	SAR /1 USD$, diario Fuente: Bloomberg (SAR)	Costo de la vida en Arabia Saudita (mensual), 1999=100 Fuente: Departamento Central de Estadísticas y Ministerio de Economía y Planificación.	Ídem	Otros pasivos corresponde a otros pasivos misceláneos en los balances originales. Estos representan cerca de 40% del pasivo e incluyen componentes tales como acuerdos de recompra, títulos de deuda propios, entre otros, cuya proporción no es publicada en la página *web* de SAMA.
EAU	Fuente: Banco Central de los Emiratos Árabes Unidos	Tasa de interés sobre depósitos interbancarios, 1 mes- anualizada Fuente: *Monetary and Banking Developments* del Banco Central de los EAU	AED /1 USD$, diario Fuente: Bloomberg (AED)	Tasa de Inflación del IPC (anual), 2000=100 Fuente: FMI	Ídem	Los datos del IPC no están disponibles en ningún lugar excepto en la página *web* del FMI.

Notas: 1/ CNIBR1D: siglas de Bloomberg para la tasa de interés interbancaria de China (CHIBOR), SRDR1T: siglas de Bloomberg para la tasa de interés interbancaria de Arabia Saudita. 2/ ARS: peso argentino, BRL: real brasileño, MXN: peso mexicano, PEN: nuevo sol peruano, USD: dólar estadounidense, VEB: bolivar venezolano, GBP: libra esterlina, EUR: euro, NOK: corona noruega, CNY: yuan chino, JPY: yen japonés, KWD: dinar Kuwaiti, INR: rupia india, SAR: rial saudi, AED: dirham de Emiratos Arabes Unidos

Revista Venezolana de Análisis de Coyuntura, 2006, Vol. XII, No. 1 (ene-jun), pp. Nn-nn
recibido: 21-03-06 / arbitrado: 31-03-06

THE POST KEYNESIAN THEORY OF BANKING AND THE ENDOGENOUS MONEY SUPPLY

Ángel García B.[*]
UNIVERSITY OF SIENA

Abstract:

This paper seeks to contribute by presenting an assessment of the relevant literature on *banking* and the *endogenous money supply*. The focus is placed on the Post Keynesian perspective, though traditional approaches are briefly discussed as well. The paper argues that, due to scope economies, banks are mistakenly confused with financial intermediaries; a common finding in the traditional literature. This is not the case of both the Post Keynesian view and the Circuit approach. Those perspectives, on the contrary, by reversing the causal link implied by the quantity theory of money, the base-multiplier and the saving-investment cycle as well as by focusing on a flow-perspective of money and on the asset side of banks' balance sheets, are both able to explain the core of the banking business and, hence, the very nature of the endogenous money supply. The paper shares the view of Screpanti (1997) for whom "…*Banks make the generic credit risk saleable*". They transform risky, illiquid, nonmarketable assets based on personal credit into safe, liquid, and marketable bank deposits which are socially perceived as money. The paper considers as well the major divergence among the Post Keynesian Horizontalist approach and the Post Keynesian Structuralist or Partial Accommodation approach; namely the exogeneity of the interest rate. Here, as in Screpanti (1997) and Wray (2004), such a divergence is assessed rather as the result of an imprecision in the definition of time horizons, or as a misinterpretation of the impact of cyclically increasing risk upon the determination of mark-ups and bank rates.

Keywords: Endogenous money supply, Horizontalist, Structuralist, generic and specific risks

INTRODUCTION

As it is well known from the literature, there is no room neither for money nor banks in General or Partial Equilibrium models and approaches based on the walrasian and Arrow-Debreu worlds. Orthodox models concerned with the study of money require *ad-hoc* assumptions in order to justify its exogenous presence, and hence, involve the acceptance of the direction of causality implied by the quantity theory of money.

Similarly, the explanation for the existence of banks has commonly been misguidedly linked to the justification for the presence of financial intermediaries, namely the persistence of *private* informational transaction costs. While financial intermediation may well be explained by the alleviation of informa-

[*] garcia@unisi.it

tional asymmetries – *specific risks* not taken care of by the market mechanism, endogenous money and banking can only be explained by the reduction of the *generic risk* involved in the monetisation of personal credit.

This paper contributes by providing a review of the most relevant literature regarding banking and endogenous money. Due to the vast extent of the space involved, topics such as credit rationing, the lender-borrower relationship, optimal contracting, bank risks and regulation are not considered. Thus, Section 2 starts by explaining the redundancy of money and banks in General and Partial Equilibrium frameworks based on the walrasian and Arrow-Debreu worlds. Section 3 deals with the traditional approach to the existence of banks and financial institutions which, as previously argued, is unable to disentangle the core of the banking business from that of financial intermediation, and hence, cannot explain the endogenous money supply.

Section 4 is concerned with the study of credit specific risks and generic credit risk. It reflects a Post Keynesian view on banks and endogenous money which is mainly based on the transformation of personal credit (e.g. loans) into endogenous bank money (e.g. deposits). Section 5 is concerned with the Post Keynesian perspective on uncertainty, liquidity, and precautionary behaviour.

Section 6 studies the most relevant literature on the Post Keynesian and Circuit approaches to endogenous money and banking. It attempts to identify the major differences among the Post Keynesian Horizontalist approach and the Post Keynesian Structuralist or Partial Accommodation approach. In doing so, it aims at reconciling both perspectives in order to rescue the main message of the Post Keynesian view on money. Section 7 provides an extensive summary of the most relevant aspects considered in all previous sections. Finally, Section 8 identifies potential areas for further research.

2. GENERAL EQUILIBRIUM, MONEY AND FINANCIAL INSTITUTIONS

> *The most serious challenge that the existence of money poses to the theorist is this: the best developed model of the economy cannot find room for it [Hahn, 1981, p.1]*

After citing the above paragraph from Hahn (1981), Davidson (1988) argues that, it is precisely the axiom of the absence of money illusion which yields money as irrelevant in orthodox theory. For the author, it is unsurprising the fact that there is «no room» for money in a theory in which "money does not matter". Moreover, he argues that the assumption of the absence of money illusion may better be labelled «the axiom of reals». As Hahn (1981) presents it, it can be summarised as:

> the objectives of agents that determine their actions and plans do not depend on any nominal magnitudes. Agents care only about «real» things, such as goods (properly dated and distinguished by states of nature), leisure and effort. We know this as the axiom of the absence of money illusion, which it seems impossible to abandon in any sensible analysis. [Hahn, 1981, p.34]

In addition to the well known result that money has no role in orthodox theory, it is for the same reason true as well that in the Arrow-Debreu economy there is no role for financial firms either. It is only in the presence of market frictions and imperfections that financial institutions come into the scene. Indeed, as it is well known from the literature, Freixas and Rochet (1997) argue that in the presence of perfect and complete markets, and under competitive equilibrium, banks, besides making zero profits, cause no effect upon other economic agents.

Thus, being the price vector the device that coordinates actions among individuals who act independently, all that is necessary to know at the time of commitment are the relevant prices associated to the securities or contingent claims under every (future) possible state of nature. This is only possible under unbounded rationality, perfect information, observability and verifiability of all possible states. Thus, as Freixas and Rochet (1997) indicate, under market completeness and under access to perfect frictionless markets, full diversification and optimal risk sharing, the Arrow-Debreu economy leads to a framework in which banks and financial institutions are simply redundant[1].

[1] Mata's (2006) heterodox approach represents an interesting exception. He proposes a non-walrasian general equilibrium framework with two phases of adjustment occurring at different speeds; in his own terminology, a *Financial Pre-adjustment Theory*. While financial (or "stocks") markets pre-adjust instantaneously through prices and quantities, real (or

3. ON THE TRADITIONAL APPROACH TO THE EXISTENCE OF BANKS AND FINANCIAL INSTITUTIONS

3.1 The Industrial Organisation approach to Banking

As Freixas and Rochet (1997) indicate under the Industrial Organisation approach to banking, banks are defined as *financial intermediaries* whose presence merely depends on the existence of frictions in transaction technologies (e.g. the possibility to save on transportation costs). In the simplest setting banks buy *loan securities*, and sell *deposit securities* under given banking technologies. Thus, the analysis centres upon the determination of equilibrium under different assumptions about the type of competition.

In the case of competitive equilibrium, banks take all prices as given, including the interest rate on loans (r_L), deposits (r_D), and the interbank market (r). Profits after management costs are defined as:

$$\pi = r_L L + r\, M - r_D D - C(D, L) \tag{1}$$

$$M = (1-\alpha) D - L \tag{2}$$

where M is the net position of the bank within the interbank market, and α represents the level of compulsory reserves as a proportion of deposits. Thus, (1) can be rewritten as:

$$\pi(D, L) = (r_L - r)L + (r(1-\alpha) - r_D)D - C(D, L) \tag{1}$$

After management costs are covered, banks' profits result from the intermediation margins on both loans and deposits. As Freixas and Rochet (1997) indicate in this setting a competitive bank controls its volume of loans and deposits so as to equalize both intermediation margins $(r_L - r)$ and $(r(1-\alpha) - r_D)$ to its marginal management costs.

Thus, an increase in the rate of deposits (r_D) will necessarily involve a decrease in the bank's demand for deposits. Equivalently, an increase in (r_L) will imply an increase in the bank's supply of loans. Economies of scope

---

"flows") markets, namely the goods market and the labour market, adjust ex-post mainly through changes in quantities. Banks and money are explicit and play crucial role.

arise in the joint production of loans and deposits whenever $\partial^2 C(D,L)/\partial L \partial D \prec 0$, and contrarily, diseconomies of scale are present where $\partial^2 C(D,L)/\partial L \partial D \succ 0$.

In this simple framework, in which self-financing and direct access to capital markets are not considered, the investment demand of firms is entirely financed by the supply of loans. Furthermore, under the assumption that Treasury Bills (B) and bank deposits are perfect substitutes for households, the competitive equilibrium of the banking sector is easily described at the aggregate level whenever:

$$I(r_L) = \sum_{n=1}^{N} L^n(r_L, r_D, r)$$ Equilibrium of the loans market (3)

$$S(r_D) = B + \sum_{n=1}^{N} D^n(r_L, r_D, r)$$ Equilibrium of the savings market (4)

$$\sum_{n=1}^{N} L^n(r_L, r_D, r) = (1-\alpha)\sum_{n=1}^{N} l$$ Equilibrium of the interbank market (5)

As Freixas and Rochet (1997) indicate, in this simple setting, an increase in the supply of Treasury Bills (B) involves a decrease in both loans and deposits; and an increase in the compulsory deposit reserve ratio (α) leads to a reduction of credit loans and to an ambiguous effect upon deposits.

Regarding, the case of imperfect competition, which could be considered to be more appropriate to the study of the banking sector due to the well-known barriers to entry, the Monti-Klein model of monopolistic competition is, perhaps, the best representative of the Industrial Organisation approach to banking.

Such a model assumes a monopolistic bank facing a downward sloping demand curve for loans, and an upward sloping supply curve of deposits. The level of equity in the model is taken as given so that the control variables for the bank are, as earlier, both, the volume of loans and deposits. The main difference with respect to the case of perfect competition is that under mo-

nopolistic competition, banks take into consideration the effects of the volume of loans and deposits upon the determination of their corresponding rates, while the interbank interest rate remains as given perhaps due to the fact that it might be fixed by the central bank or the international market.

In this setting, profits after management costs are defined as:

$$\pi(D,L)=\left(r_L(L)-r\right)L+\left(r\left(1-\alpha\right)-r_D(D)\right)D-C(D,L) \qquad (6)$$

And optimality implies:

$$\frac{r_L^*-\left(r+C_L^{'}\right)}{r_L^*}=\frac{1}{\varepsilon_{L(r_L^*)}} \qquad \frac{r(1-\alpha)-C_D^{'}-r_D^*}{r_D^*}=\frac{1}{\varepsilon_{D(r_D^*)}} \qquad (7)$$

As Freixas and Rochet (1997) argue, in the above framework, a monopolistic bank sets its quantities of loans and deposits so as to equalize the so-called Lerner indices (the ratio of the marginal benefit to price) to the inverse elasticities. The evident implication from the above result is that the introduction of substitutes to banking loans (e.g. corporate firms' securities) and to banking deposits (e.g. money market funds) have an adverse immediate impact upon the bank's intermediation margins.

The extension of the Monti-Klein model to the case of oligopolistic competition is straightforward. Oligopolistic competition in this framework leads to a Cournot-type imperfect competition setting, in which N banks participate in the market. The profit of bank n is hence given by:

$$\pi(D_n,L_n)=\left\{\left(r_L\left(L_n+\sum_{m\neq n}L_m^*\right)-r\right)L_n+\left(r\left(1-\alpha\right)-r_D\left(D_n+\sum_{m\neq n}D_m^*\right)\right)D_n-C(D_n,L_n)\right\} \qquad (8)$$

Optimality implies an N-tuple of vectors $\left\{D_n^*,L_n^*\right\}_{n=1,\ldots,N}$ such that (8) is maximised:

$$\frac{r_L^*-\left(r+\gamma_L\right)}{r_L^*}=\frac{1}{N\varepsilon_{L(r_L^*)}} \qquad \frac{r(1-\alpha)-\gamma_D-r_D^*}{r_D^*}=\frac{1}{N\varepsilon_{D(r_D^*)}} \qquad (9)$$

if costs are assumed to be linear, then it is the case that[2] $C(D_n, L_n) = \gamma_D D_n + \gamma_L L_n$.

Perhaps a more realistic approach to imperfect competition would be that of Bertrand Competition, or more precisely, Double Bertrand Competition since it takes place simultaneously in both the loans and the deposits market. In such a case banks (or financial intermediaries, in this setting) make use of rates as their strategic instruments. However, as Freixas and Rochet (1997) indicate, two major shortcomings arise from competition à la Bertrand: (i) there is no guarantee of the existence of equilibrium, and (ii) the presence of two firms – in this case banks or financial intermediaries – immediately leads to perfect competition[3,4].

3.2 The Incomplete Information Paradigm

While reviewing the Industrial Organisation approach to banking which innocently treated banks as financial intermediaries (or security retailers), it was made evident that economies of scope may arise from the opportunity to save on transactions costs such as transportation costs[5]. Even though from the historical point of view, it is accepted those types of transaction costs have significantly contributed to the emergence of financial intermediaries, Freixas and Rochet (1997) argue that a major shortcoming of the previous analysis arises from its reliance upon the exogeneity of transaction technologies.

---

[2] Note that two limiting cases of interest arise; when $N \to 1$ monopoly, and when $N \to \infty$ perfect competition.

[3] Note that Bertrand-Edgeworth competition analysis which takes into consideration capacity constraints certainly cannot be easily justified in the case of the banking sector.

[4] Stahl (1988) and Yanelle (1988, 1989) study the case of Double Bertrand competition interestingly leading to outcomes different from the walrasian equilibrium.

[5] Further examples such as the advantageous simultaneous supply of safekeeping and deposit services for coins and metals, and of international trading and payment services clearly add significant historical explanatory value.

Clearly, if one takes into account the progress in telecommunications and information based technologies, as well as the resulting advance in sophisticated financial instruments aimed at reducing costs of transactions, one should expect financial intermediaries to disappear. Thus, a different type of transaction cost must be considered in order to explain the persistence of banks and financial intermediaries; those are informational asymmetry costs.

Freixas and Rochet (1997) claim as well that, the Industrial Organisation approach to banking fails to capture the complexity of banking activities precisely because of two major reasons: (i) banks' financial contracts both, loans and deposits, cannot be easily retailed or marketed[6] mainly due to the fact that the identity of the bank (or holder) matters – non-anonymity[7]; and (ii) the terms and characteristics of the contracts issued by debtors (or borrowers) are typically different from those required and desired by depositors (or creditors).

The original contribution of Gurley and Shaw (1960) as well as the subsequent works by Benston and Smith (1976), and Fama (1980), deal with the previously mentioned complexity. However, *it is important to note once again*, that their views generally apply not only to banks but as well to financial intermediaries such as mutual funds and insurance companies[8].

---

[6] Recall once again that the Industrial Organisation approach to banking views banks merely as security retailers.

[7] The securitisation of bank assets brings about doubts on the veracity of such a statement. However, it is still true that securitisation is strongly limited by asymmetric information.

[8] The patient and careful reader must have noted that no major difference has yet been identified between banks and financial intermediaries. Sections 4 and 6 will attempt to provide clarification on what are perhaps two of the most critical notions on the topic. The apparently simple distinction between specific and generic credit risk; and between short-term credit money (initial finance) and long-term securities (final finance) will be presented as fundamental for both, understanding the core of the banking business, and comprehending the very notion of money; certainly, something not clearly achieved neither by all academics nor even by all bankers.

Precisely, the previously mentioned contributions view the core of banking, mutual funding and insurance provision, as a transformation of financial contracts in a way that allows for greater risk sharing and diversification[9].

Following the above setting, financial intermediaries are conceived as coalitions of individual creditors or borrowers who take advantage of economies of scope and economies of scale arising from transaction technologies[10]. Precisely, regarding economies of scale, a major contribution is Diamond and Dybvig's (1983) work on liquidity insurance[11]. They show that by the law of large numbers, a great coalition of individuals is able of investing in illiquid but more profitable assets, while simultaneously retaining sufficient liquidity to satisfy individual requirements.

In the above framework, Diamond and Dybvig's (1983) result formally implies that the market allocation is not Pareto optimal, and therefore can be improved by introducing a deposit contract issued by financial intermediaries. The justification for their result relies precisely on their assumption about the independence of individual liquidity shocks affecting economic agents in an uncorrelated fashion.

Under the above mentioned assumption, complete contingent markets are absent due to two reasons: (i) the state of economy is not observable by anyone because the list of consumers receiving liquidity shocks is unknown, and (ii) the remaining non-contingent financial market (the bond market) is unable to provide sufficient risk-sharing by itself.

Both, the previous result regarding economies of scale arising from liquidity insurance activity or from the distribution of other transaction costs across a large number of individuals belonging to a coalition, and the earlier ap-

---

[9] As previously argued, in an Arrow-Debreu world, frictionless and complete markets would suffice to obtain perfect diversification and optimal risk-sharing.

[10] Economies of scale arise in the presence of fixed transaction costs, or simply under increasing returns to the transaction technology. Under fixed transaction costs, the formation of coalitions allows redistributing the fixed cost among numerous depositors or borrowers. Equivalently, the presence of non-convexities or indivisibilities implies that the formation of coalitions may allow individuals to hold more diversified portfolios than the ones they could separately hold.

[11] Once again, the patient reader should wait until next sections for an explanation on liquidity and its association with the economy's generic risk.

proach which focused on economies of scope arising from savings on non-informational transaction costs are unable to grasp the characteristic peculiarities associated with banks.

The latter is true because of the initial previous reasoning. Under the Industrial Organisation approach to banking, banks are innocently considered as security retailers under an assumption of exogeneity of transaction technologies. The former is true as well because economies of scale arising from liquidity insurance activity or from the absorption of other transaction costs by a large coalition are present not only in the case of the banking sector, but as well in the case of regular insurance, and inventory management.

However, when major transaction costs arise from asymmetries of information, be them in either their ex-ante form of adverse selection, their interim form of moral hazard, or their ex-post form of costly state verification, the justification for the presence of banks and intermediaries becomes evident.

As Bhattacharya and Thakor (1993) argue, the work by Leland and Pyle (1977) may be considered as the starting point of this branch of literature. It represented a major impulse to modern financial intermediation theory since it provided a rationale for financial intermediaries which, being able to discover the quality (or mean returns) of given individual projects, become capable of selling claims to primary investors upon a diversified portfolio of their assets.

As Leland and Pyle (1977) sustain, banks may be able to communicate relevant information about borrowers in a better way and at lower costs. As Bhattacharya and Thakor (1993) indicate the previous point was crucial since "…it suggested that an information-based foundation for the banking firm could be built that subsumed both brokers and asset transformers".

In the view of Bhattacharya and Thakor (1993), financial intermediaries provide brokerage and qualitative asset transformation services. Thus, economies of scale and economies of scope arise from both services. Precisely, regarding brokerage, they argue that brokers develop special skills that allow them interpreting subtle informational signals while being able to exploit (or profit from) cross-sectional – across customers – and intertemporal reusability of information. In relation to qualitative asset transformation

services, they underline the major modifications of asset attributes such as: maturity, divisibility, liquidity and credit risk transformation[12].

Returning to the problem of information asymmetries, or what is the same, to the previously mentioned information-based foundation of the banking firm, Freixas and Rochet (1997) underline that as discussed in Akerlof's (1970) seminal paper[13], asymmetric information is relevant for the explanation of market inefficiencies. Precisely, in the case of financial markets, when individual borrowers have private information on the quality of the projects they wish to finance, the competitive equilibrium may turn to be inefficient. However, as shown by Leland and Pyle (1977), the adverse selection problem arising from asymmetric information may be partially reduced if borrowers can use retained equity as a signal to investors[14]. As firms cannot obtain perfect risk sharing, such a signal represents a cost which can be considered as an informational transaction cost.

As a reaction to the contribution of Leland and Pyle (1977), further works such as those by Diamond (1984) and Ramakrishnan and Thakor (1984) were able to prove that economies of scale may be present under certain conditions. Precisely, if firms are able to form coalitions (intermediaries) under the absence of frictions in internal communication, the cost of capital per firm becomes a decreasing function of the number of firms belonging to the coalition. In this setting, diversification reduces monitoring costs. The major distinction among these last two contributions is that, while Diamond (1984)

---

[12] In the *conventional literature*, while maturity transformation implies the financing of long-term bank assets with shorter-term liabilities, divisibility transformation implies, for instance, mutual fund holding of assets of a larger unit size than the average corresponding liabilities. Equivalently, while the *traditional literature* refers to liquidity transformation as the bank funding of illiquid loans trough liquid liabilities, it refers to credit risk transformation as bank monitoring efforts aimed at reducing default probability.

[13] The original contribution by Akerlof (1970) established the fundamentals of asymmetric information theory. Roughly speaking, his contribution has been taken to describe how the presence of quality heterogeneity and asymmetric information may lead to market inefficient outcomes, and even to the disappearance of a particular market (e.g. the used car market). When quality is ex-ante undistinguishable for a buyer due to asymmetric information, incentives exist for the seller to offer a low-quality good as if it were a high-quality one. The buyer anticipates this problem and takes into consideration the uncertainty about the quality of the good. In such a framework, only the average quality of the good is considered, implying an adverse selection problem in which higher than average quality goods are driven out of the market.

[14] This is analogue to the theory presented by Spence (1973) for the job market.

focuses on depository financial intermediaries who provide qualitative asset transformation services, Ramakrishnan and Thakor (1984) concentrate on non depository financial intermediaries.

Thus, one of the pioneer works on the delegated monitoring theory of financial intermediation is that by Diamond (1984) who argues that, the presence of increasing returns to scale associated to monitoring activity implies a specialisation under which lenders delegate monitoring functions instead of undertaking them by themselves. In such a framework, in order to trust the information provided by monitors, they must be given the appropriate incentives to perform in the interest of those who delegate.

Diamond (1984) argues that whenever investors are able to impose non-pecuniary penalties on those monitors who do not perform well, the optimal deal resembles a deposit contract[15]. Furthermore, diversification of loans allows the monitor (or banker) to reduce the cost of delegation so as to approximately offer riskless deposits. Calomiris and Kahn (1991) argue that demand deposits represent the optimal banking arrangement as they are the best instruments to impose discipline upon bank managers since, whenever anything goes wrong, investors withdraw their deposits.

Holmström and Tirole's (1997) work is outstanding. It sustains that outside investors require the involvement of the monitor in the project through its participation in the financing, thereby creating the opportunity for economies of scope between monitoring and lending activities, while simultaneously emphasising the role of banking capital. Their framework smartly captures the substitutability between capital and monitoring. Without assuming complete diversification as in Diamond (1984), banking capital in Holmström and Tirole's (1997) model, deals with the moral hazard problem at the bank level[16].

Further research such as that by Hellwig (1991) refers to monitoring in an ampler sense. It may involve ex-ante screening activity in a context of adverse selection as in Broecker (1990) and prevention of the borrower's op-

---

[15] Some criticism has been raised regarding Diamond's (1984) assumption of non-pecuniary penalties which were modelled in accordance to the borrower's cash flow reports. The reason is that more realistic non-pecuniary costs such as loss of reputation, jail, and so on, may better be considered as lump-sum.

[16] A major difference between Diamond's (1984) framework and that of Holmström and Tirole (1997) is that, while in latter perfect correlation among projects (financed by banks) is assumed, in the former, project returns independence is considered.

portunistic behaviour during project implementation (moral hazard) as in Holmström and Tirole (1997). Finally, it may consider as well the case of punishing as in Diamond (1984), and auditing as in Townsend (1979), Gale and Hellwig (1985), and Krasa and Villamil (1992), with both punishing and auditing taking place under (costly state verification arising from) a failure of compliance with contractual obligations.

As perceived by Bhattacharya and Thakor (1993), the theory of financial intermediation based on informational asymmetries explains the existence of financial intermediaries as a response to the incapability of the market-based mechanisms to efficiently deal with informational problems. Consequently, in such a framework financial intermediaries contribute to reducing informational anomalies.

In spite of the progress of the above mentioned literature, and as pointed out by Freixas and Rochet (1997), while it is true that monitoring activities for which Diamond (1984) suggests banks may have a comparative advantage[17], and which may include all the above mentioned forms of, ex-ante screening, prevention of opportunistic behaviour, punishing and auditing, all improve the efficiency of the lender-borrower contracts, it is also true that all those monitoring activities may as well be undertaken by individual lenders themselves or by specialized firms such as rating agencies, brokers, security analysts, auditors and so on. An alternative explanation must then capture the particular complexities of banking and money; those complexities are the concern of the next sections.

4 CREDIT SPECIFIC RISK AND CREDIT GENERIC RISK:

A Post Keynesian view on Banks and Money

As argued by Screpanti (1993, 1997), the (*credit*) *specific risk* is that related to the *insolvency risk* of a particular debtor. In as much as such *insolvency risk* refers to the actual possibility that the debtor will not be effectively

[17] Several assumptions are crucial for such a comparative advantage. Scale economies must be present, implying that a bank must finance many projects simultaneously. Additionally, divisibility arguments, such as small capacity of investors relative to the dimensions of the investment projects, that is, each project requires the funds of several investors. Finally, low costs of delegation, implying the costs of controlling the bank itself must not exceed the gains from scale economies associated to the direct monitoring of the investment projects.

capable of repaying his debt, it should naturally constitute the objective foundation of the (*credit*) *specific risk*. However, as in practice the latter is frequently reduced to the creditors' *subjective evaluation* of the debtor's capability to repay, it is common to observe substantial divergences among the different estimations reached by diverse potential creditors.

It is precisely this divergence among different evaluations of a debtor's insolvency risk what complicates the monetisation of personal credit. Equivalently, it is such a divergence among different evaluations what reduces as well its marketability. Thus, it is exactly because of the fact that the debtor's ability to generate income is usually not fully observed because of the presence of hidden or private information on the part of the borrower (asymmetric information) that personal credit lacks moneyness, liquidity, and marketability. Particularly these are some of the conditions allowing banks to flourish.

Thus, even though banks cannot fully remove the specific credit risk associated to a particular borrower, they can greatly contribute to ameliorate informational asymmetries, and in so doing, they can reduce the discrepancies among the different evaluations of risk. Screpanti (1993) argues banks are endowed with relatively greater proficiency and technical skills for the evaluation of the debtor's business, and moreover, by establishing durable relations with their customers, they are capable of accruing a stock knowledge regarding the evolution of their cash flow capacity and wealth conditions.

Additionally, Screpanti (1997) sustains that by applying differential interest rates and collaterals, banks are able to enforce truthful revelation of borrowers' information (and type), and therefore are able to discriminate among different risks. The reason is simply that, while those borrowers with low-risk projects are interested in revealing information, those with risky projects are interested in hiding it. Furthermore, just as financial intermediaries do, banks as well can make use of diversification strategies in order to reduce the overall credit risk faced by their creditors. Thus, the overall risk bank-creditors take will always be lower than the sum of risks banks tolerate from debtors.

As previously mentioned, Freixas and Rochet (1997) have pointed out that all the above mentioned activities precisely designed in order to deal with the problems related to the presence of asymmetric information and risk diversification may as well be undertaken or at least partially undertaken by individual lenders themselves, by specialized firms such as rating agencies, brokers, security analysts, auditors and so on.

Equivalently; however, with greater emphasis, Screpanti (1993, 1997) clarifies the fact that, even though it is correct to recognise that the management of *credit specific risk* – either through the direct partial removal of informational asymmetries or through the indirect reduction of overall (credit) risk by means of diversification – represents an important part of the banking business, *it is not its essential part, and indeed, it can be conducted by non-bank institutions*. Precisely, he sustains that: "…as far as the gathering of information on specific risks and the diversification of investments is concerned, there is still no need for banks" (Screpanti, 1997, p. 125).

If the management of *specific credit risk* can take place without banks, what is that so particular about banks, what is the core of their business? As Screpanti (1993, 1997) argues, after a great deal of *specific risks* are reduced either by the attenuation of informational problems, or by means of diversification, there prevails an aggregate substantial amount of risk; such a risk is the *credit generic risk*.

Generic risk refers to that risk common to all. It is independent of particular characteristics of the debtor, and therefore, mainly responds to causes which out of control to him; for instance: crises, recessions, natural disasters, social tensions, political problems, and so on.

Screpanti (1997) points out that under times of tranquillity specific risks of borrowers are regularly not strongly correlated. In as much as this is true, diversification strategies are able to allow for a major reduction of risk. However, as soon as unstable times arrive, two major factors contribute to the increase of *generic risk*: instability itself increases the level and comovement of *specific risks* (under recessions, crises, prosperity, and booms) and with it, of course, the level and variability of *generic risk*, but as well, and on top of it, instability presents itself under no specific frequency, and for this, no accurate estimation or forecast can be obtained for *generic risk*.

As Screpanti (1993) indicates, the fact that *generic risk*, on top of being high and variable, cannot be accurately estimated represents the greatest disincentive for potential creditors. In such scenery, which Davidson (1988) may typify as not coming from an "ergodic random draw" from any given and unchanging probability distribution, is where banks certainly play a role.

Indeed, as Screpanti (1993, 1997) holds, banks besides being efficiently prepared (with special abilities and technical skills) to carry out the task of managing specific risks – which as previously argued may be managed as well by financial intermediaries, brokers and others – banks are especially endowed to play a role which is not only essential but as well particular to

them; “they take upon themselves the generic risk of their debtors and transform into a bank wealth [insolvency] and liquidity risk…*Banks make the generic credit risk saleable*” (Screpanti, 1997, p. 571; italics added).

Why are creditors willing to accept much more liabilities from banks than from banks’ debtors? The author sustains four fundamental instruments are used by banks for that to happen. Those instruments which he calls risk transformation instruments are: (i) base money and quasi-money reserves; (ii) liability insurance (e.g. deposit insurance, and hedging instruments); (iii) membership into a network of relationships with other banks, allowing for the provision of mutual assistance and therefore for the socialisation of part of the risks (e.g. interbank markets, etc.); (iv) they may belong as well to a system of banks led by a central authority playing the role of lender of last resort; and (v) and most important, they bear part of the risk by investing their own capital and reserves into the business.

Clearly, as argued by the author, the major economic consequences of the use of the above set of risk transformation instruments are that: (i) banks’ insolvency risks are publicly perceived as very low; (ii) and for the previous reason, the public is willing to accept bank money (liabilities); and (iii) banks are able to profit from charging relatively high rates for their risky assets while paying relative low rates for their safe liabilities.

The above is a Post Keynesian approach to banking, which interestingly enough, views the risk transformation process precisely in the opposite way conventional literature does. Thus, while it is commonly read when referring to banks that: “…Specifically, they transform deposits of convenient maturity, such as demand deposits (without any restriction on the minimal amount and with a low risk), into nonmarketed loans (with a longer maturity and in larger amounts, and with credit risk)” (Freixas and Rochet, 1997, p. 18), the Post Keynesian literature, instead, emphasises exactly the opposite direction, that is, it views asset (risk) transformation as a process which goes from assets (loans) to liabilities (deposits): “*The business of banks consists of transforming potential credit into money*” (Screpanti, 1993, p. 123; italics added).

5. UNCERTAINTY: LIQUIDITY AND PRECAUTIONARY BEHAVIOUR

5.1 On economic agents

Orthodox theory studies economic agents under methodological reductionism as it concentrates upon the study of individual behaviour. Heterodox

theory, on the contrary, even while recognising the relevance of individual relatively free, rational, and self-interested choices, places a great attention upon what Screpanti (1993) labels *collective agents*.

Screpanti (1993) argues that individuals act independently only within the boundaries defined by a potentially large set of institutional and cultural elements; at least those which influence the structure of their needs, interests and objectives. As in the Post Walrasian framework studied by Bowles (2004), Screpanti (1993) considers how endogenous institutions may shape individual behaviour by defining the set of rules to act under uncertainty.

In particular, Screpanti (1993) identifies three hypotheses under which institutions are found to play a crucial role in the determination of individual behaviour under uncertainty. A first hypothesis which he labels "the criterion of institutional compliance", argues that individuals appeal to strategies of simplification (e.g. they like simple rules). In doing so, the individual pursues a reduction of the number of control variables upon which decisions must be made, either by disregarding some potential but irrelevant "excess" options, or simply by focusing his attention upon the relevant ones[18].

It is precisely because these strategies are not always necessarily either fully conscious or consistent, that institutions play a role in the selection of simple rules. Thus, as sustained by Screpanti (1993), individuals will likely follow those options which have been socially proved to work. In doing so, be it in a more or less conscious way, they will be making extensive use of the aid of institutions and socially prevalent rules of behaviour.

A second hypothesis about individual behaviour is that, once the set of choice variables has been identified, the individual will chose the option he considers best. In doing so, the individual is assumed to make use of certain evaluators (e.g. preferences, decision-making rules or any other judgement) to allow himself choose under what Screpanti (1993) labels the "criterion of conditional improvement". It is an *improvement* because the individual se-

[18] As the author argues, this could simply be put into mathematical terms. For instance, in a system of equations in which the unknown are the variables which represent the choices or controls of the individual, while the parameters and the functional forms of the equations assimilate the elements affecting their decisions, disregarding a variable could be captured by taking as constant or parameters those variables which under a simplifying strategy facilitate the determination of the system.

lects what he considers best[19]. It is *conditional* because it depends on the previously discussed constraints set by institutions and therefore upon a reduced set of options from which to choose. Finally, because of such conditionality and because of the fact that many evaluators may be used, neither maximisation nor optimality is guaranteed.

Precisely, the fact that neither maximisation nor optimality is guaranteed, and as argued by Screpanti (1993), because all choices change the data of the problem, and as many of them may be mistaken ex-post as clearly may be the case under uncertainty, it is always possible that the adaptive behaviour of individuals constrained by their own rules and institutions, could lead to a path-dependent dynamics in which optimum outcomes may turn to be repeatedly rejected.

However, as systematic errors cannot persist over time, a third criterion which gives the first two a rational substance, and which Screpanti (1993) has labelled "institutional revision", implies that the individual behaviour will remain linked to the previous criterions of institutional compliance and conditional improvement as long as no continuous worsening of his situation takes place. Thus as in Bowles (2004), Screpanti (1993) presents a framework in which endogenous evolution of institutions and preferences dominate.

The above Post Walrasian setting, when merged with the Post Keynesian view of a monetary production economy, allows for a description of the institutions of precautionary behaviour and money contracts as fundamental and evolutionary stable within modern capitalist economies. Next subsections deal with the role of money under uncertainty.

5.2 When money matters

Post Keynesian economist Paul Davidson (1988) refers to Arrow and Hahn's demonstration of the fact that in an economy functioning along a calendar time including past and future, whenever contracts are specified in money terms, all existence theorems of general equilibrium are jeopardised (Arrow and Hahn, 1971, p. 361). In terms of Davidson (1988) this implies that "there need never exist, in the long run or the short, any general equilibrium

[19] Notice that, as indicated by the author, the *status quo* could be one of the possible choices.

market clearing price vector". Davidson's (1988) quotation of Arrow and Hahn (1971) shows they have noticed that:

> …the terms in which contracts are made matter. In particular, if money is the goods in terms of which contracts are made, then the price of goods in terms of money are of special significance [nominal magnitudes matter!]. This is not the case if we consider an economy without past and future….If a serious monetary theory comes to be written, the fact that contracts are made in terms of money will be of considerable importance. [Arrow and Hahn, 1971, pp. 356-357, in Davidson, 1988, p. 153].

Keynes (1973, 13, p. 411) had long before argued that money was not neutral, and that, therefore, money plays a fundamental role affecting motives and decisions both in the short run and the long run. Equivalently, Davidson (1982-1983) argues that: (i) in an economy which moves through calendar time, and (ii) in a world in which uncertainty about the future cannot be reduced to an "ergodic random draw from a given and unchanging probability distribution", and (iii) as "…production takes time", the optimal way to organise the production process is through the use of forward monetary contracts (Davidson, 1988, p. 152).

Moreover Davidson (1988) argues that, it is precisely the consciousness about calendar time, the uncertainty about the future, and the fact that production itself is time-consuming what creates a need for liquidity, a concept he argues: "only has meaning and relevance in a world which does not rely on the axiom of reals"[20].

Equivalently, following Davidson (1988), apart from the organisation and efficiency of production and consumption processes of non-*homo sapiens* lower life forms, the recognition of the passage of time and the uncertainty associated to a "non-ergodic" world, as well as the complexity of the interrelation between consumption and monetary processes, makes of the utilisation of monetary contracts an essential evolutionarily stable institution of human economic activity. Money as a means of payment is anything legally and legitimately able to discharge a contractual liability. Thus, legal enforcement, and the authority of law are fundamental for all parties involved in a monetary contract.

As claimed by Davidson (1988, pp. 154-155): "Forward nominal contracts for the sale of goods and services are human institutions devised to enforce money wage and price controls over the life of the contracts". They contribute

[20] For the concept of the "axiom of the reals", see Section 2.

to the reduction of potential conflicts by guaranteeing both parties that even under uncertainty of future events any lack of compliance with the terms will be penalised by law. Thus, it is precisely the unpredictability of money wage and nominal price flexibility, two major characteristics of neoclassical economics, what firms and households are exactly most averse to, and therefore, what they are readily interested to contract in order to reduce.

Thus, in a monetary production economy, the presence of nominal contracts and means of money allowing for the termination of contractual obligations affect both, real production, and general decisions and motives of economic agents. Precisely, the latter are the immediate concern of the next subsection.

5.3 Precautionary behaviour, liquidity and solvency.

In the view of Screpanti (1993, 1995) precautionary behaviour is linked to bounded rationality and to tolerance thresholds. Those thresholds are usually defined by reservation measures. Some examples include the selection of levels of inventories of intermediate, semi-processed, and final goods; the selection of production capacity; and the choice about holdings of financial assets, quasi-money, and money. All of them operate as shock absorbers when dealing with perturbations, errors and uncertainties.

As Screpanti (1993) argues those thresholds, which are decided by individuals, tend to be collectively defined using as benchmarks distinct habits, conventions, and beliefs which are socially proved to effectively work. As previously argued those conventions are susceptible of being revised as any other institution is, but as long as they do not incur systematic worsening, they will be perceived as correct and therefore will persist.

Money is a particular asset representing an important component of the economy's wealth. Besides being unit of account for economic transactions, it is characterised by four major properties: (i) it is a reserve of value like any other asset; (ii) it is marketable like securities and quasi-money are but certainly personal credit and many other assets are not; (iii) it is liquid as quasi-money is as well; and finally and above all, (iv) it is an instrument of credit accepted as means of exchange and as means of payment.

Screpanti (1993) indicates that firms hold money balances at a rather low level, but to some extent in a fixed or stable ratio to the expected long-run flow of production. Moreover, he sustains that this minimum reservation level

for money holdings is insensitive to: changes in interest rates and short-run fluctuations in output (demand).

The reason why the money reserve ratio of firms is relatively insensitive to both changes in interest rates and short-run fluctuations of output is clear-cut. At least at the aggregate level, two major factors tend to offset each other. While opportunity costs increase with the amount of money holdings and with the rate of interest on money substitutes (e.g. quasi-money), renewal costs which are associated to the monetisation of such money substitutes, increase with the number of transactions and decrease with their unit size.

Thus, while for the case of large firms the level of money holdings tend to be high, their ratios to output are regularly low; and while for the case of small firms the level of money holdings tend to be low, their ratios to output are usually high. Following the previous reasoning, one would expect however, that because of the intermediate levels of money holdings of average size firms their reserve ratios should be more sensitive to potential gains and therefore should be more reactive to changes in interest rates and short-run fluctuations of output. However, either because their share in the economy is low, or perhaps simply because firms do not follow a maximising behaviour, it is a regular circumstance to observe that at the aggregate level, a low elasticity of money holdings to interest rates persists (Screpanti, 1993).

Equivalently, in relation to short-run fluctuations of output (demand), as inflows and outflows tend to approximately vary in the same direction during cyclical fluctuations, reservation ratios remain mostly unchanged. Moreover, a second shock absorber is always available in the form of quasi-money or short-term non-monetary holdings. These are used as well to cope with any short-term monetary requirements. Thus, as indicated by Screpanti (1993), firms' cash management activity contributes to the procyclicacity of the income velocity of money.

When referring to banks, Screpanti (1993) holds that the banking sector benefits from the existence of increasing returns to scale. Banks' profits derive mainly from the spread among credit and debit rates, and from the composition and size of their assets. In deed, hypothetically speaking, he argues that, if it not were for the presence of psychological and institutional factors, rather than technological ones, banks all together, by reducing credit rates, would be able to expand their volume of loans almost indefinitely and hence the volume of their deposits in such a way that debit rates would decrease as

well. However, banks as well as corporate firms hold reserves in order to deal with illiquidity risks[21].

Indeed, banks hold primary reserves in the form of monetary base[22] but additionally, they hold secondary reserves in the form of quasi-money. Primary reserves are accepted for immediate compensation, but yield no income[23]. Secondary reserves must first be monetised if they want to be used for clearing, but they do yield an interest, though inferior to that of loans. Thus, the major difference derives from the fact that while primary reserves are monetary, liquid and marketable, and while secondary reserves are liquid and marketable but non-monetary, loans are non-monetary, non-liquid and non-marketable.

It is precisely the fact that loans are non-marketable what forces banks to hold secondary reserves. And, equivalently, it is in particular the fact that quasi-money cannot be used for compensation what forces banks to hold primary reserves. Thus, while the profit motive creates incentives for banks to keep their primary ratio as low as possible, the precaution motive does exactly the opposite. The reason is that under a low primary ratio, a shortage of secondary reserves would immediately force banks to look for "urgent money". This in turn, implies the risk of facing either excessively high interest costs, or simply having to deal with difficulties posed by the market or the central bank.

As sustained by Screpanti (1993) under such circumstances, the reserve ratio depends on three major factors. Firstly, it depends on the subjective or psychological preference for money. Secondly, it depends on the objective or market based rate of return on assets. And, thirdly, it depends on various institutional elements such as: the degree of organisation of the money market, and the financial and monetary policy of the central bank.

---

[21] A bank's illiquidity risk mainly refers to the risk associated to the possibility that net compensations of customers' deposits among banks may lead to an extensive cash deficit for a particular bank. In dealing with this type of risk, banks are expected to manage their assets and liabilities in an efficient way. However, not even efficient management of assets and liabilities can guarantee full elimination of this risk.

[22] Usually banks' money base holdings include: cash under the bank's custody, and reserves under the custody of the central bank.

[23] The exception is the case of non-compulsory remunerated reserves under the custody of the central bank.

It is clear that; on the one hand both, well organised and deep money markets as well as interest rate-smoothing monetary policies contribute to the reduction of reserve ratios; on the other hand, it is evident as well that lower asset returns, and therefore, lower opportunity costs, increase reserve ratios.

What perhaps calls for greater clarification is the so-called banks' preference for money. Contrarily to the case of the public's liquidity preference which mainly concerns the choice of composition among non-monetary short-term and long-term assets in the case of creditors (e.g. households), and non-monetary short-term and long-term liabilities in the case of debtors (e.g. corporate firms), banks' preference for money regards the choice among low-risk monetary assets and high-risk non-monetary assets – e.g. risky loans whose counterpart are safe deposits (Screpanti, 1993).

Thus, while for the case of the public both households (creditors) and firms (debtors), the major concern is the maturity composition of their assets and liabilities respectively, for the case of banks, the major concern is the ratio between primary reserves and deposits. This is true because bank's liabilities mainly consist of liquid obligations (e.g. deposits, interbank loans, etc). Thus, quasi-money itself cannot suffice to provide psychological relief.

As argued by Screpanti (1993), banks are not only concerned about illiquidity. They are also concerned about the possibility of not being able to recover the whole value of their credit loans. As safeguard, banks hold equity capital and pay close attention to the evolution of their debt to assets ratio. This as well forms fundamental part of the banks' precautionary behaviour; banks' capital is both a signal of their ability to generate profits but as well a buffer against possible losses and insolvencies. A low capital to assets ratio represents a condition of high profitability but as well of high exposure. Thus, regularly, monetary authorities are the ones who impose capital adequacy ratios. However, the effective ratio held by banks varies in accordance to their evaluation regarding customers' solvency, and therefore is highly associated to the bankers' perception regarding the overall evolution of the economy.

6. CREDIT MONEY AND ITS ENDOGENOUS SUPPLY

Rochon (2001) points out that American Post Keynesians regularly refer to the initial contributions of both Hyman Minsky and Nicholas Kaldor as the starting point of the theory of endogenous money. Thus for instance, while Wray (1992, p. 161) and Dymski and Pollin (1992, p. 41) have referred to the original works by Minsky (1957a, 1957b), Musella and Panico (1993) and

Targetti (1992) have referred to Kaldor's (1958) Memorandum to the Radcliffe Committee as a major initial contribution to the theory.

However, Rochon (2001) argues that the two Cambridge economists Richard Kahn and Joan Robinson had already provided a "well-defined" theory of endogenous money by the late 1950s. Moreover, he argues that in numerous considerations their analysis is superior to the *initial contributions* by Minsky and Kaldor whose critiques of Monetarism mainly referred to the variability of the income velocity of the money stock – explained either by financial innovations in the case of Minksy or by the existence of "near moneys" in the case of Kaldor – rather than by focusing directly on the rejection of the directionality of the causality implied by the quantity theory. Previous to studying the major contributions to the theory of endogenous money, the notion of exogenous money supply is considered.

To say that the money supply is exogenous accounts to say that the central bank – in response to changes in the demand for money and by making use of open market operations, the discount rate, reserve requirements, or some other instrument – has the ability to adjust the economy's overall volume of money so as to bring it to that particular level corresponding to its policy objectives (Rousseas, 1986). This is completely refuted by all Post Keynesian economists.

As argued by Rousseas (1986) both Monetarists and "bastard" Keynesians[24] consider the money supply as exogenous. On the one hand, Monetarists disagree with the possibility to make effective use of monetary policy in order to countercyclically control the "exogenous level of the money supply". For them it is sensible to ignore short-run business fluctuations in order to play for the long-run. On the other hand, "bastard" Keynesians do allow for the presence of short-run "leakages" or fluctuations in the income velocity of money. Those fluctuations which are considered a reaction to interest rate changes undermine the effectiveness of monetary policy; the latter being assumed to affect directly the supply side.

Thus, in terms of the famous Cambridge equation ($MV = Y$) both, Monetarists and "bastard" Keynesians consider nominal income (Y) to be a function of the money supply (M); though the latter conceive such a link as unpredictable. Nevertheless, for both, the causal arrow runs from money to nominal income ($M \Rightarrow Y$). Particularly, in the case of Monetarism, as the income velocity of money is assumed to be constant in the long-run ($\overline{V}$), and

[24] Joan Robinson is responsible for coining such an expression.

as the economy is expected to naturally tend toward a unique full-employment equilibrium, then the price level itself ($P = Y / \overline{y}$) is uniquely linked to the money supply in a proportionate way. Thus, from this viewpoint, a change in the money supply (M) yields no effect either on the real sector of the economy or on the interest rate since the latter is linked to marginal productivity and the former is at its full employment level.

On the other hand, Neoclassical (or "bastard") Keynesians refute both the idea of the natural tendency toward full-employment equilibrium and the stability of the income velocity of money. Thus, they argue in favour of discretionary monetary policy which, when mixed with an appropriate fiscal strategy, allows for a fine-tuning of the economy toward a full employment level of equilibrium characterised by relative price stability; Rousseas (1986) refers to this as "Samuelson's artificial restoration of Say's law through the «skilful use of fiscal and monetary policy»".

In view of the previous arguments and regardless of their disagreements, both Monetarist and "bastard" Keynesians consider the money supply as exogenously fixed by the central bank. As argued by Rousseas (1986), contrary to the original view of Keynes who denied the validity of the quantity theory of money[25] and for whom the rate of interest was a monetary phenomenon and hence a "reward for parting with liquidity", in the orthodox view, the rate of interest is regarded as the reward for abstinence.

Lavoie (1992) following Keynes, holds that, in opposition to the orthodox view, savings can only stem from a previous act of expenditure. The generation of income resulting from an increase in investment leads to the generation of savings, hence savings cannot finance investment; savings are just a residual of the system that reduces aggregate demand.

Arestis (1992), Davidson (1972, p. 270), Lavoie (1992), Moore (1988b), and Rochon (2001) sustain that commercial banks finance the credit firms demand in order to remunerate workers and to cover other production and investment expenditures. Rochon (2001) referring explicitly to Moore (1996) and Wray (1999), argues all Post Keynesians accept that the central bank sets the rate of interest and acts as a lender of last resort.

---

[25] Rousseas (1989, p. 477) points out, however, that Keynes in the *General Theory* had not yet fully freed himself from the quantity theory of money.

Similarly, Pasinetti (1974, p. 44) argues that the base rate is "determined exogenously with respect to the income generation process. Whether, in particular, liquidity preference, or anything else determines it, is entirely immaterial". Thus, Rochon (2001) argues Post Keynesians reject the Hicksian IS-LM which treats the monetary and real sector as independent[26]. As sustained by Rochon (2001) money is not neutral both in the short and long-run; money is an effect instead of a cause; expected output drives money supply, and prices are a mark-up over costs and the desired rate of return.

In addition, Rochon (2001) argues that even though the New Keynesian approach (as in Gertler and Gilchrist, 1993) underlines the role of banks, the theory is utterly flawed in the sense that it treats banks as financial intermediaries who simply bring borrowers and lenders together. In such a framework, the money supply is not endogenous, and the central bank is able to control reserves, loans, and "*prior deposits"*. It is a reassertion of the wrong direction of causality, namely from savings to investment; banks' prior deposits are supposed to finance bank loans; "money is credit driven but supply-determined" (Rochon, 2001, p. 293). This is completely refuted by all Post Keynesian economists, as well as by Keynes himself.

As pointed out by Rousseas (1986) apart from one of Keynes' major works, namely the Treatise (1930) in which the disequilibrium approach is prevalent[27], and apart from the General Theory (1936) which is not at all the major reference for the case of Post Keynesian economists, Keynes' three most celebrated articles posterior to the General Theory are: "The General Theory of Employment" (Keynes, QJE, February 1937a), the Alternative Theories of the Rate of Interest" (Keynes, EJ, June 1937b), and "The Ex-ante Theory of the Rate of Interest" (Keynes, EJ, December 1937c).

Post Keynesians often refer to the last two of the above mentioned articles since they introduce the concept of the "finance motive". As argued by Rousseas (1986), contrarily to the stocks approach predominant in Keynes' study of the demand for money balances including both the transactional component and the speculative component (idle balances), the finance motive is rather a flows approach under which the notion of time is made explicit in order to capture the idea that firms make at least some of their investment

---

[26] Rochon (2001) argues as well that Post Keynesians reject the notion of the natural rate of interest.

[27] Rousseas (1986, p. 32) argues, however, that the *Treatise* was "neoclassical in its theoretical core".

decisions ex-ante, and hence generate a "temporary demand for money before [actual investment] is carried out" (Rousseas, 1986).

Thus, the finance motive concerns a planned investment for which provision of funds must be secured before investment itself takes place. In the view of Rousseas' (1986) interpretation of Keynes, ex-ante investment plans imply an increase in the demand for ex-ante finance which (citing Keynes) "cannot be met without a rise in the rate of interest unless the banks are ready to lend more cash…at the existing rate of interest"; the latter being unlikely in the view of Rousseas' (1986), who once again, quoting Keynes, underlines that the role of banks becomes crucial in the "…transition from a lower to a higher scale of activity". Moreover, he argues that, under insufficient accommodation of ex-ante demand for finance, congestion takes place in the short-term loan market and the rhythm of investment is severely constrained. Thus, the notions of the finance motive and overdraft facilities are extremely crucial to Post Keynesian analysis. Keynes refers to both of them arguing that:

> [T]o the extent that the overdraft system is employed an unused overdrafts ignored by the banking system, there is no superimposed pressure resulting from planned activity over and above the pressure resulting from actual activity. In this event, the transition from a lower to a higher scale of activity may be accomplished with less pressure on the demand for liquidity and the rate of interest. [Keynes, in Rousseas, 1986, pp. 37-38; italics supplied].

From above it is easy to infer that if overdraft facilities were unlimited, no major interest rate change would have to take place, and therefore the money supply would have to be considered as perfectly elastic (horizontal). This is precisely the basis on which major theoretical differences across Post Keynesian economists are found.

For Rousseas (1986, p. 73), a complete theory of endogenous money supply entails: (i) the denial of the notion of the natural tendency toward a long-run full-employment equilibrium, or equivalently, the acceptance of inherent instability of capitalist economies; (ii) the rejection of the stability of the income velocity of money and of its independence on the rate of interest, what accounts to equivalently accept that the demand for money is an unstable function of real income, and that the economy's financial structure is subject to continuous financial innovations in response to (tight) monetary policies; and above all, (iii) the rejection of the causal arrow of the quantity theory which goes from money supply to nominal income ($M \Rightarrow Y$) in favour of the opposite direction ($Y \Rightarrow M$) from nominal income to money supply.

While there is plenty historical evidence in support of (i) and (ii), though as argued by the author many Post Keynesian economists disregard the second, it is the interpretation of the third point which generates the most profound debate among Post Keynesian economists. In the view of Rousseas' (1986), the most extreme version of the third point, regards to it as implying that: "…any increase in nominal income causes an increase in the supply of money sufficient to accommodate the resulting increase in the demand for money". He refers to this "most extreme" version as "*full accommodation*", arguing that:

> The critical question is whether the supply of money fully and automatically accommodates any increase in the demand for it or whether it does so only partially, with changes in the income velocity making up a part or all of the shortfall. If the former is the case, as indeed some Post Keynesian « monetarists» believe it to be, then the theory of an endogenous money supply implies its own version of Say's law as applied, in reverse, to the monetary sector, namely that demand creates its own supply. If the latter is the case, the argument is more complicated but less simple-minded and less subject to controversy –while attaining essentially the same results, although posing at the same time a critical problem for the continued viability of capitalism that the proponents of the Say's law in reverse avoid by recourse to their own Post Keynesian version of the neoclassical fine-tune hypothesis. [Rousseas, 1986, 74; italics supplied].

Thus, as previously argued major discrepancies within Post Keynesianism concern whether *full accommodation* takes place or not. Jarsulic (1989, p. 37) identifies as well the disagreement that has taken place among those economists who have tried to develop a Keynesian perspective of money and finance. The author argues that Robinson and Eatwell (1973, pp. 218-219) and Davidson (1972, pp. 246-281) have stressed the relevance of banks' decisions for the investment process. From this perspective, banks' willingness to supply the flow of credit needed for the increase in investment is viewed as a necessary if not sufficient condition for the success of the economy. Indeed, Davidson (1972) points out that:

> If additional finance is to be obtained, and if the banks are unwilling to create it, then some members of the community must be induced to give up some of their portfolio money holdings in exchange for securities, if entrepreneurs are to carry through their orders of fixed capital goods. Hence the market price of securities must initially fall [the rate of interest must rise]...Of course, the equilibrium level of output in t+1 will be lower and the interest rate higher than if money supplied had expanded in pace with the additional investment demand. [Davidson, 1986, 279; italics supplied].

Jarsulic (1989, p. 37) implicitly places Kaldor (1982) and Moore (1983, 1985) in the list of Horizontalist Post Keynesian economists when he argues

that they usually regard to the money supply as a passive demand-driven magnitude, so that accumulation can only be constrained to the extent that the cost of reserves exogenously determined by the central bank affects the market rate of interest. The next subsection deals more profoundly with the view of The Horizontalist Approach.

6.1The Horizontalist Approach

In the previous section it was argued that one of the many crucial contributions of Keynes' was the introduction of the notion of the "finance motive". Instead of focussing its attention on the stock of money balances, it concentrates on the flow-of-credit demand for money. For Kaldor (1982), Lavoie (1992), Moore (1983, 1988a. 1988b), Rochon (2001) and many others, the response of the money supply to changes in the demand for it is seen as perfectly elastic. That is the short-run money supply curve is conceived as horizontal for any given level of the short-term interest rate. This section examines such a perspective.

As argued by Moore (1983), the historical evidence suggests that the ability of the FED to control the rate at which bank credit expands is extremely limited. Moreover, he argues that the behaviour of money wages, both because of being the greatest component of firms' working capital and because of being a major determinant of disposable personal income, is crucial to the determination of private demand for bank credit.

Moore (1983) sustains as well that, the central bank, in accordance to its objectives of providing support to the financial system, seems to tolerate the accommodation of the money stock to increases in the demand for bank credit; "Whenever money wages are rising rapidly, it will prove very difficult for the Federal Reserve to restrict the rate of monetary growth…The economics profession in general must come round to the view that the supply of money is horizontal at every going short-term interest rate" (Moore, 1983, p. 555).

More emphatically, he upholds that as the quantity of money is always demand-determined, there can never be an "excess" supply of money balances. Moreover, from his viewpoint, bank reserves cannot be quantity rationed; central banks can set the short-term interest at which they will provide liquidity, but the overall level of the money stock is out of their control.

In a posterior article, Moore (1988a, p. 381) argues that the money supply is endogenously determined, and that credit money is credit driven in the

sense that loans generate deposits rather than the contrary. Moreover, he asserts that in all modern economies, as long as borrowers have access to large unused overdraft facilities, the amounts of loans outstanding are determined by bank borrowers and not by banks themselves. Thus, as long as money is accepted in exchange for non-monetary goods and services, the supply of credit money is as well demand determined; there is no such "excess" supply of money; rather money supply and demand are interdependent.

In his view, banks are price setters and quantity takers in both their retail loan and their deposit markets; so both loans and deposits are demand driven. The mark-up of the loan rate over the deposit rate must cover costs and targeted profits; and the amount of total loans and deposits demanded must preserve some desired ratio, which at the aggregate level of the banking system should not deviate far from unity.

Thus, as indicated by Moore (1988a), provided that banks' loan collateral standards are met, any increase in the demand for bank credit will simultaneously result in an increase in loans and deposits. As these deposits are spent by borrowers, either in the purchase of financial or real assets, the providers of these goods, including workers, will accept bank money in exchange; so as long as bank deposits preserve moneyness – which in terms of Screpanti (1993) would imply the acceptability of bank money as means of exchange for goods and services – bank deposits will always be demanded.

Thus, as plainly indicated by Moore (1988a), all economic agents who receive credit money (bank deposits) in exchange for real and financial goods and services are indeed selling those goods and services on credit. They are willing to accept and increase their holdings of deposits, and hence to expand their "convenience lending" to banks only provided they expect all other economic agents will do the same. It is precisely the fact that such "convenience lending" requires no sacrifice of contemporaneous consumption or investment expenditures what results in the absence of any need to incur additional interest "bribe"; "*There is no need for the supply of credit money to be upward sloping*" (Moore, 1988a, p. 382).

Moore (1988a) argues as well that, for both, individual banks and the banking system as a whole, any short-run excess or deficiency of the demand for loans over the deposit supply of funds will be taken care in the wholesale markets (e.g. CDs, TBs, etc.) in which, as opposed to the case of the loans and deposit markets, banks are price takers and quantity setters. Over longer runs, instead, Moore (1988a) argues that the lending and deposit rates will be adjusted so as to guarantee that the total amount of loans sup-

plied to borrowers is approximately equal to the total amount of deposits received from lenders.

For Moore (1988a), the marginal and average cost of wholesale assets is identical. Consequently, banks – at least in particular markets – set their lending rates to the extent allowed by their market power as a mark-up over the wholesale rate. Additionally, as the marginal cost of funds to banks is primarily dependent upon the supply price of bank reserves which, in turn, in the closed economy, is mainly exogenously set by the central bank, reserves must always be endogenously supplied.

In the case of the open economy, Moore (1988a, p. 383) argues that as bank reserves may also be provided from outside the system at a supply price which is set by foreign central banks, national central banks must determine the exchange rate as well as the local interest rate at the same time. Thus, while whenever a flexible exchange rate regime is in place the central bank enjoys greater freedom to set the domestic rate, when a fixed exchange rate regime is chosen, central banks loose control over short-rates unless they resort to exchange controls. The previous argument is also found in Mata (2003) and Wray (2004). The former, in the case of open developing economies and in order to gain control over monetary policy, proposes the implementation of a flexible exchange rate regime under *Financial Bimonetarism* and currency-matching rules later described in García (2004)[28].

For Moore (1988a), the money supply endogeneity is misunderstood by many who interpret it as implying the passivity of the central bank in the sense that the monetary authority is unable to affect the money growth. He argues that: “An endogenous money supply simply denotes that the money supply is determined by market forces” Moore (1988a, p. 384). In his view central banks are still capable of administering the level of short-term interest rates in an exogenous way. This is in turn, he argues, may still allow affecting the level of credit and money demanded and therefore, indirectly, the behaviour of money growth.

[28] García (2004) does not argue in favour of full liability de-dollarisation. Instead in García (2004), the establishment of a currency-matching rule is advocated for the case of small open economies in order to guarantee that foreign currency-denominated bank loans are uniquely offered to the export business sector. The proposal aims at eliminating balance sheet problems and currency mismatches at both the corporate level and the bank level. The paper shows that both the control over the short-term rate and the benefits of asset partial dollarisation may be simultaneously retained.

Moreover, it is argued that money supply endogeneity implies the central bank pegs the short-term interest rate indefinitely over time; and that since this has not been always observed, money supply endogeneity corresponds to a particular short historical period of time. In opposition to that Moore (1988a) sustains that this is a misconception, in the sense, it is not true that money supply endogeneity requires indefinite short-term interest rate pegging. Rather, central banks usually adjust the short-term rate depending on their view regarding the state of the economy, as well as depending on their objectives regarding their monetary policy.

Furthermore, Moore (1988a, p. 384) argues that "…a long-run money supply curve does not exist, since the level of interest rates cannot be specified independently of demand conditions. But the central point is that the short-run money supply curve is always horizontal…Only once it is fully comprehended that the supply of credit money is inherently endogenous and that the money supply function should be viewed as *horizontal* in the interest-money space, at a level of short term interest rates established by the central bank, can the base-multiplier relationship be understood for what it is: a pure descriptive tautology…". This view is shared as well by Rochon (1999, 2001).

Rochon (2001) argues that the very initial contributions by Minsky (1957a, 1957b) and Kaldor (1958) focused on the instability of the income velocity of money under an exogenous money supply assumption. Their purpose was to question the view that inflation was a monetary phenomenon, but as well to argue that financial innovations allowed banks to economise on reserves and hence to supply new loans.

In the view of Rochon (2001), the problem with the above argument is that it implied that the causality between savings and investment was not broken. Moreover, he argues that: "*The argument that output can be financed through a change in the velocity of money is not consistent with a theory of endogenous money since it re-establishes the Quantity Theory of Money*" (Rochon, 2001, p. 290; italics supplied).

Furthermore, he argues that as loans are placed and deposits are created, money supply increases, but: "In fact, banks only seek reserves after they have made loans and created deposits. Consequently, reserves do not constrain the ability of banks to make loans." (Rochon, 2001, p. 293). Equivalently, Moore (1989, p. 12) argues that: 'Since reserves are ordinarily supplied endogenously on demand, they have no causal role in the money supply process". Additionally, Hewitson (1995, p. 287) sustains that "loans are made, deposits are created, and banks only later seek the reserve assets required to support these deposits and meet reserve requirements".

Rochon (1999, 2001) argues that even if the central bank does not fully accommodate, money is still fully endogenous; “banks are generally not constrained in terms of their reserves” (Rochon, 2001, p. 293). Equivalently, Kaldor (1982) holds that to a greater or lesser degree central banks will in general meet the demand for reserves. Forman et al. (1985, p. 30) sustain that: “The central bank, in order to maintain the liquidity of the financial system, is forced to purchase government securities in the open market so as to accommodate, at least in part, the need for additional credit as the pace of economic activity quickens”. Moreover, as argued by Rochon (2001, p. 293) when referring to Moore (1988b) and Palley (1991) respectively: “At the very limit, banks can borrow reserves from the central bank, albeit at a ‘frown cost’…They can even borrow them from other banks in overnight markets”.

Thus, as in Kaldor (1982), Moore (1988b), Lavoie (1992), Rochon (2001) and many others, the full accommodation approach views the endogenous money supply as regularly characterised by a given interest rate on bank loans with a horizontal line as its best graphical representation. Furthermore, as argued by Thirlwall (2000, p. 14): “Credit-money only comes into existence if it is demanded, so that in a pure credit money economy, supply can never be in excess of the amount individuals wish to hold”.

In short, the Horizontalist Approach may be summarised as in Rochon (2001): (i) the direction of causality of the quantity theory is reversed so that it runs instead from firms’ expected income to demand for credit, and then from money to effective income; (ii) the causality between reserves, deposits and loans is reversed so that loans create deposits and hence reserves are endogenous as in Pollin (1991), Lavoie (1992) and Eichner (1987); (iii) firms first finance production and then savings are generated, so that the direction of causality between savings and investment is as well reversed as in Kregel (1973), Davidson (1972) and Shapiro (1977); (iv) the interest rate is not determined by supply and demand schedules, and hence is exogenous as in Lavoie (1996), Hewitson (1995), Smithin (1994) and Wray (1995); (v) the supply of credit is endogenous and money is a continuous credit-driven circular flow which is destroyed through the repayment of loans as in Eichner (1987), Lavoie (1992) and Parguez (1984, 1987).

6.2 The Circuit Approach

The Circuit Approach is essentially represented by the so-called French-Italian School. Some major contributions are Cencini (1984, 1988)

and Graziani (1989)[29]. Circuit theorists usually emphasise the primary role of money as being a means of payment making the circulation of commodities possible. Thus, when money is kept idle, it is considered a stock of wealth but not as an instrument of circulation. As argued by Graziani (1989, p. 4): "In principle, in a perfect competitive credit market, no one would borrow money from a bank before a payment comes due. This is the simple consequence of assuming rational behaviour, since there would be no point in borrowing money and paying interest on it while keeping it idle. Money therefore *only comes into existence the moment a payment is made*".

In the view of Graziani (1989), the presence of commodity money is inconsistent with a true monetary system. "The ideal model of the theory of the circuit therefore resembles the so-called Wicksellian[30] model of a pure credit money, with the addition of a Central Bank" Graziani (1989, p. 3). Moreover, he argues that the existence of money requires: (i) the presence of a token currency (e.g. paper currency); (ii) the acceptance of money as a "means of final settlement"; and (iii) that money must not provide seignorage privileges to any payee. He argues this is satisfied when payments are made by means of "promises of a third agent", namely banks. Thus, in terms of Graziani (1989), any monetary payment must involve a triangular transaction between a payer, a payee, and a bank.

In the Circuit Approach, money is as well a strict endogenous variable. Money is created in response to the firms' needs of finance in order to pay for wages and means of production. Thus, as sustained by Graziani (1989), initial finance must cover current costs of production.

For the theorists of the circuit, fixed investment finance is not supplied by banks; rather firms' fixed investments require a final finance which is derived from the proceeds from sales or from new issues on the financial market. As explained by Graziani (1989, p. 8), "What matters to firms is that *final finance be sufficient to cover total initial finance*". When this occurs firms are able to repay their debts to the banks and money is destroyed. Thus, under this viewpoint it does not matter if money comes from consumption or from savings. However, it must be clear, that: "Only under the very special assumptions of the neo-classical equilibrium, proceeds from issues on the financial

[29] Graziani (1989) suggests as well the contributions in French by Schmitt (1984, 1986) and Parguez (1975, 1981).

[30] See Wicksell (1898).

market equal the monetary value of investment, so that investment appears to be financed by means of long-term issues" (Graziani 1989, p. 21).

Thus, just as argued by Rochon (1997) money is different than credit, in the sense that credit is an ex-ante instrument which allows production to take place, and money is an ex-post variable which appears only when credit is used by firms. In Rochon (1997, p. 281), the demand for credit is different than the demand for money; and they are conceived as independent of each other: "It is, in fact, quite conceivable for the demand for money to be nil, while it is never the case that the demand for credit is nil". The latter is a stock concept and the former is a flows notion.

As sustained by Rochon (1997), credit is the starting point whose end is the destruction of money. The circuit period entails no time; investment plans start the process leading to a demand for credit, which in turn, as credit is used leads to the creation of money, and finally to the reimbursement of debt and destruction of money. Thus, bank credit is utilised in order to allow production take place, and savings as well as collections from sales are used as way of reimbursing the initial debt. From this viewpoint, contrary to the views which consider Keynes' finance motive either as an extra amendment or addition to the regular demand for money, as fourth motive for holding money, or simply as an extra source of money demand taking place during expansions, for the Circuit Approach, when the circuit closes, the initial finance has already been used and destroyed so that new credit must be demanded and used in order to start a new cycle.

6.3 The Partial Accommodation Approach

> The links between money and investment occur in two ways. Portfolios hold monetary assets, liabilities of financial institutions, as protection against contingencies, as well as assets, or claims upon assets, that enter into production. Secondly, investment spending has to be financed. [Minsky, 1991, p. 210; italics supplied].

As sustained by Rousseas (1986), Weintraub's explanation for the endogeneity of money is a consequence of his wage theory[31]. For a given level of real output, any increase of wages over the level of average productivity will give rise to a proportional increase in nominal output and prices. This, in turn leads to a higher transactions demand for money (credit), which as as-

[31] See Weintraub (1978a, 1978b).

sumed by Weintraub, under a constant velocity of circulation, it must be the case that it is fully accommodated by the central bank if real output is to be kept constant. Thus, under a stable velocity of circulation, failure of accommodation, be it none or partial, would result in a higher price level and lower output (stagflation).

Rousseas (1986) sustains that in this framework, it is assumed the central bank can prevent an increase in the money supply. The reason for that is the critical assumption associated to the presence of a constant velocity of circulation. Thus, the traditional link between money supply and income cannot be said to be effectively broken. The causal link is just *politically* broken when it is assumed that the central bank fully accommodates the "needs of trade" in the face of political pressures exercised by those leaders responsible for full employment[32].

Rousseas (1986), Pollin (1991), and Palley (1991) disapprove the uncritical acceptance of the extreme position pioneered by Nicholas Kaldor. Such a position is based on the role of lender of last resort, which leads as well to a perfectly elastic money supply curve at any interest rate level set by the central bank. Succinctly, it argues that central bank's main responsibility is to guarantee the solvency of the financial system. As critically described by Rousseas (1986, p. 78): "Acting as a lender of last resort through the discount window (the bank rate), the central bank gets hoisted on its own petard. To prevent credit crunches from turning into disastrous debt deflations, the monetary authorities have no choice but to accommodate the 'needs of trade'".

---

[32] In Weintraub's model changes in the price level respond to changes in unit labour costs. The money supply is linked to real output and employment. Thus prices are a function of wages which in turn are predetermined by social bargaining; thus monetary policy can only affect prices indirectly whenever the central bank does not fully accommodate the demand for money, and hence when it brings about unemployment leading to a tampering of wage demands. For Weintraub, this is only possible in the case the central bank is able to defy the pressure exercised by political authorities. As argued by Rousseas (1986), Weintraub (1978b, p. 193) pulls back from the notion of full accommodation indicating that money supply endogeneity "may not be complete; it has been erratic and only intermittently predictable. Nevertheless it exists, though the relationship is not readily captured in a tidy analytical model". Moreover he argued that the extent of predictability of accommodation would entail information on the "psychological profile of the MA personalities and staff". Just as argued by Rousseas (1986, p. 85) prediction is simply not possible, and the degree of accommodation will change under different circumstances and pressures, and "…*with the response of the private financial sector in defiance of the policies pursued by the monetary authorities*".

In the view of Rousseas (1986), Weintraub's political argument in favour of full accommodation is substituted by Kaldor's emphasis on the lender of last resort role of the central bank. Rousseas (1986, p. 82) labels both approaches as a *Post Keynesian version of the neoclassical fine tuning*.

Rousseas (1986, 86) when referring to Kaldor's *full accommodation position* argues that: "In the case of Kaldor, the exogenous interest rate coupled with a lender of last resort function of the central bank severs the Keynesian link between velocity and the rate of interest". Subsequently, when referring to Kaldor's acceptance of potential *partial accommodation*, he argues that Kaldor assumes that changes in the stock of money and changes in velocity are perfect substitutes, so that "...For Kaldor, any shortfall in the increase in the supply of money will be met in full by a rise in velocity to 'make up the difference', i.e., the *adjusted* or *effective* supply of money curve would be perfectly elastic and hence horizontal to the money axis".

In response to the previous arguments by Kaldor, Rousseas questions it by arguing that: "If, however, money and the income velocity of money are less than perfect substitutes, if, in other words, the velocity increase does not fully 'make up the difference', then the endogeneity of money does not imply a perfectly elastic or horizontal supply curve of money, and the relation of velocity to the rate of interest becomes an important consideration to be taken explicitly in any reformulation of an endogenous theory of the money supply, i.e., the rate of interest is no longer exogenously determined by the central bank and severed from the income velocity of money, as it is Kaldor's theory of endogeneity via the lender of last resort argument".

Rousseas (1986, 1989) proposes a less extreme Post Keynesian approach to the endogenous money supply. He argues that the theory of endogenous money supply must incorporate changes in the velocity of circulation as part of its rationalisation. He suggests a different graphical representation than the horizontal Post Keynesian approach and the vertical Monetarist approach (See Appendix). Following diverse contributions by Minsky, changes in velocity in response to higher interest rates are decomposed. On the one hand, movements along the velocity curve are considered as a demand-side result from the activation of idle balances and the economising of transaction balances. On the other, shifts of the velocity curve represent supply-side financial innovations taking place during long-lasting expansions, or simply as a reaction to extremely tightening monetary policies.

6.4 Post Keynesianism and Reconciliation

When referring to the discrepancies among the Horizontalists and Structuralists, Post Keynesian economist Wray comments: "*For the most part, I believe this particular debate was at best a result of misunderstanding, and I wish it had died a more timely death"* (Wray, 2004, p. 1; italics supplied).

Wray (2004) reviews the positions of Horizontalists and Structuralists. He argues that while both accept the view that the money supply should be treated as an endogenous variable, the latter do not believe the interest rate should be taken as exogenous[33].

Wray (2004) identifies four reasons why central banks accommodate the demand for reserves. Referring to Moore (1991), he argues the first reason is the lagged and contemporaneous reserve accounting. It implies that the level of reserves that must be maintained depends to a greater or less extent on past levels of deposits. As "the required portfolio adjustment could be too great", the central bank must, in practice, provide an automatic overdraft at the discount rate. A second, and in his view, "less satisfying" rationale for accommodation is that related to the lender of last resort role; the preservation of stability within the financial system. As argued by Wray (2004), "The problem with this explanation is that while it is undoubtedly true, it applies to a different time dimension…It would presumably take some time before refusal to accommodate the demand for reserves would be likely to generate the conditions in which bank runs and financial crises begin to occur. Once these occurred, the central bank would surely enter as a lender of last resort, but this is a different matter from the daily 'horizontal' accommodation".

The third explanation, which Wray (2004) finds more plausibly applicable "to the time frame over which accommodation takes place" is that associated to the need of maintaining an "orderly payment system". He argues, par clearing within the banking system and with the government demands opportune access to reserves. The fourth argument explained by Wray (2004) is

[33] Wray (2004) discusses on the different meanings of exogeneity. He argues that the definition most commonly adopted by Post Keynesians economists is that related to "the control sense: an exogenous variable is one whose value is set by government policy". A second meaning is that associated to causality; while a strongly exogenous variable must be independent of all other variables in a system, a weakly exogenous variable need only be independent of contemporaneous values of the endogenous variables, but may depend on their lagged values. The third definition of exogeneity he considers is related to the statistical sense; a variable is exogenous when it is independent of all unobserved explanatory variables of the model, and hence when it leads to unbiased estimates.

that concerning the relative stability of the overnight interest rate. In absence of accommodation such a rate would be highly unstable due to the inelasticity of the demand for reserves as well as due to the fact that the private supply cannot be increased.

Regarding the major discrepancy among Post Keynesians, namely the exogeneity of the interest rates, Wray (2004) contributes by identifying which interest rates could be said to be exogenous in the control sense; that is which interest rates could be said to be fixed or directly controlled by the central bank. Firstly, he agrees – in terms of Moore – with the fact that the overnight rate is exogenously administered by the central bank. He argues as well that provided short-term sovereign debt is a good substitute of overnight reserve lending, the latter should closely track the former. Moreover, he argues that as long-term rates on sovereign debt greatly depend on expectations regarding the short-term rate and hence regarding the future course of monetary policy, they could be said to be largely affected by the central bank if it could announce its planned targets far into the future.

Additionally, Wray (2004) sustains that once risk considerations are accounted for, whether or not commercial bank rates on loans and deposits ought to be considered as exogenous – in the control sense – depends on the reaction of the mark-up (and mark-down). If the mark-up is itself independent of changes in monetary policy, then the central bank could straightforwardly affect the loan rate so as to reach any higher target. However, as sustained by Wray (2004) if the mark-up is not constant over time, perhaps, due to micro and macroeconomic reasons, then the complexity of the administration of loan rates increases; although, provided the central bank's rate cannot go below zero, the lower bound of the loan rate is the mark-up itself.

Wray (2004) comments on the criticisms raised against the Horizontalist position when the variability of the mark-up reacts to micro factors such as the state of the balance sheets of individual banks and particular borrowers as well as to overall macroeconomic factors associated with the state of the business cycle: " It is true that Moore does not deny that the mark-up might be variable – and I am sure he will agree that it can vary over the cycle – rising with pessimism and falling with optimism. This could even be seen as a reclassification of risks…Moore's horizontal loan supply curve is at a point in time, while theirs is a plot of interest rates over time. Moore's horizontalism is not inconsistent with a rising mark-up over time as risks in the economy increase, and the structuralist concern with innovation and evolution of practice can be incorporated within Moore's framework…the point that Hyman Minsky had tried to make is that over an expansion, and under some conditions, the

balance sheets of both borrowers and lenders can become 'stretched' in such a way that loan rates tend to rise; this can be construed as either an upward sloping trend or as shifts due to rising risk".

Additionally, Wray (2004) admits that while it is true that households hold credit cards with pre-authorised credit limits and that corporate firms, as well, negotiate credit lines with their banks, it is also true that in both cases, full utilisation of the credit limits will certainly affect rates and fees charged on additional borrowing. He attributes this to a "transition to riskier classes". He acknowledges as well that commercial and mortgage loans entail individual negotiations and possibly variable rates depending on institutional arrangements, with "loan quantities and uses carefully established at the time interest rates are quoted".

A further contribution which is as well aimed at reconciling the Horizontalist and Structuralist positions is that by Screpanti (1997). He derives a rising money supply curve based on what he labels "a reformulation of Kalecki's increasing risk hypothesis"[34]. In such a framework, the limit to credit expansion is based neither on rising marginal costs nor institutional constraints; rather he argues: "it is the very effect of credit expansion on the degree of risk that will impose those limitations…their main concern is to choose the level of activity and the composition of assets and liabilities so as to balance expected profits and perceived risks" (Screpanti, 1997, p. 573)

The above setting captures the relevance of banks' balance sheets and risks in the determination of loan and price policies. Precisely, it presents the risks borne by the bank in the form of a liquidity and solvency risk. Although it is assumed banks are price setters in both the deposit and loan markets, mark-ups are considered as fixed but adjustable, in the sense that: "the relationship existing between loan rates and the discount and deposit rates is no so strict as conventional mark up theories maintain…This is specially true when risk conditions change" Screpanti (1997, p. 574). Particularly he argues that banks control the spread in order to deal with increasing risk.

Thus, for a given cost of attracting reserves, the implicit mark up reacts upwards when both the bank's risk and its preference for money increase[35].

---

[34] Screpanti (1997) associates the core of banking with the *transformation of generic risk by bearing part of it*. See Kalecki (1937).

[35] The preference for money, as argued by Screpanti (1997) is a measure of the bank's degree of risk aversion; the greater the preference for money the greater the desired reserve ratio. See Subsection 5.3 for the precise definition as in Screpanti (1993, 1997).

Precisely, for a given level or quantity of reserves, as loans, and consequently deposits, expand, the spread between credit and debit rates becomes wider. The same occurs as well when, for a given effective reserve ratio, the bank's subjective preference for money (risk aversion) increases. Thus, when bank risks increase, they resort to mark up increases in order to both, curtail the demand for loans, and prevent further reductions on the effective reserve ratio.

Succinctly, Screpanti's (1997) structural theory of endogenous money considers the short-run adaptation of supply to demand at the expense of interest rate increases in the presence of expanding risk[36]. He shows that as long as the time horizon is properly identified, the Horizontalist approach to endogeneity becomes comparable to the accommodative approach. Moreover, he argues that, while in the short-run, supply could fully accommodate demand if banks are sluggish in modifying rates, in the long-run, the same could occur when central banks are unwilling to repress the banking system, or simply when financial innovations emerge as a reaction to monetary tightening.

7. Final Remarks

- There is no room neither for money nor banks in General or Partial Equilibrium models and approaches based on the walrasian and Arrow-Debreu worlds. This is corroborated by Hahn (1981), and it is no surprise for Post Keynesian economists (Davidson, 1988).
- The Industrial Organisation approach to banking, which is mainly based on the idea of the opportunity to save on non-informational transaction costs (e.g. transportation costs), is well suited to partially contribute to the explanation for the initial emergence of national and international physical depository and payment services, an hence, to explain the emergence of primitive financial intermediaries (Freixas and Rochet, 1997).
- However, as such a theory innocently considers banks as financial intermediaries and security retailers, it, unsurprisingly, does not capture the complexities of money and banking.

---

[36] Screpanti (1997) considers four different cases of adaptation depending on: (i) if banks try to follow demand; (ii) if banks try to encourage it; (iii) if they rather try to enliven reserves; and finally, (iv) if they try to attract reserves.

- Under asymmetric information – e.g. under the presence of private or hidden information – the contemporary theory of financial intermediation is mainly grounded on the opportunity to save on informational transaction costs through ex-ante screening (to reduce adverse selection), prevention of opportunistic behaviour (to reduce moral hazard), and ex-post punishing and auditing (to reduce costly state verification).
- On that ground, such as theory has greatly contributed to the explanation for the existence and persistence of financial intermediaries as a response to the incapability of the market-based mechanisms in efficiently dealing with informational problems, and therefore in providing full diversification and risk-sharing (Bhattacharya and Thakor, 1993).
- However, as it is the case of the Industrial Organisation approach to banking, the contemporary theory of financial intermediation fails as well to disentangle the core of the banking business from that of financial intermediation which, mainly due to scope economies, is as well performed by banks. The theory of financial intermediation mostly deals with specific risks associated to private information, and therefore cannot capture the implications of generic risk for the existence of banks and money.
- Banks besides being efficiently prepared to carry out the task of managing specific risks – what is done as well by financial intermediaries, brokers and others – banks are especially endowed to play a role which is not only essential but it is as well particular to them; "they take upon themselves the generic risk of their debtors and transform into a bank wealth [insolvency] and liquidity risk…*Banks make the generic credit risk saleable*" (Screpanti, 1997, p. 571; italics added).
- To transform risky, illiquid, nonmarketable assets (personal credit) into safe, liquid, and marketable money assets (e.g. deposits), four fundamental risk transformation instruments are used by banks: (i) base money and quasi-money reserves; (ii) liability insurance – e.g. deposit insurance, and hedging instruments; (iii) they may enjoy the benefits from the membership to a network of relationships with other banks, allowing for the provision of mutual assistance and therefore for the socialisation of part of the risks – e.g. interbank markets, etc.; (iv) they may belong as well to a system of banks led by a central authority playing the role of lender of last resort; and (v) and above all, they bear part of the risk by investing their own capital and reserves into the business (Screpanti, 1993, 1997).
- The major economic consequences of the use of the above set of risk transformation instruments are that: (i) banks' insolvency risks are publicly perceived as very low; (ii) for the previous reason, the public is willing to accept bank money (e.g. deposits and liabilities); and (iii) banks are

able to profit from charging relatively high rates for their risky assets while paying relative low rates for their safe liabilities. "*The business of banks consists of transforming potential credit into money*" (Screpanti, 1993, p. 123).

- Davidson (1982-1983) argues that (i) in an economy which moves through calendar time, and (ii) in a world in which uncertainty about the future cannot be reduced to an "ergodic random draw from a given and unchanging probability distribution", and (iii) as "…production takes time", the optimal way to organize the production process is through the use of forward monetary contracts (Davidson, 1988).
- Moreover Davidson (1988) argues that it is precisely the consciousness about calendar time, the uncertainty about the future, and the fact that production itself is time-consuming what creates a need for liquidity.
- For the previous reason, productive firms hold money balances at a rather low level, but to some extent in a fixed or stable ratio to the expected long-run flow of production. Moreover, this minimum reservation level for money holdings is insensitive to: changes in interest rates and short-run fluctuations in output – demand (Screpanti, 1993).
- As previously argued, banks hold primary reserves of monetary base but additionally, they hold secondary reserves in the form of quasi-money. Primary reserves are accepted for immediate compensation, but yield no income. Secondary reserves must first be monetised if they want to be used for clearing, but they do yield an interest, though inferior to that of loans.
- As argued by Screpanti (1993) under such circumstances, the reserve ratio depends on three major factors. Firstly, it depends on the subjective or psychological preference for money. Secondly, it depends on the objective or market based rate of return on assets. And, thirdly, it depends on various institutional elements such as: the degree of organisation of the money market, and the financial and monetary policy of the central bank.
- Thus, while for the case of the public both households (creditors) and firms (debtors), the major concern is the maturity composition of their assets and liabilities respectively, for the case of banks, the major concern is the ratio between primary reserves and deposits. This is true because bank's liabilities mainly consist of liquid obligations – e.g. deposits, interbank loans, etc. Thus, quasi-money itself cannot suffice to provide psychological relief (Screpanti, 1993).

- As argued by Screpanti (1993), banks are not only concerned about illiquidity. They are also concerned about the possibility of not being able to recover the whole value of their credit loans. As safeguard, banks hold capital and pay close attention to the evolution of their debt to assets ratio.
- Banks' capital as well forms fundamental part of the banks' precautionary behaviour; it is both a signal of their ability to generate profits but as well a buffer against possible losses and insolvencies. A low capital to assets ratio represents a condition of high profitability but as well of high exposure.
- Regarding money supply, exogeneity implies that the central bank – in response to changes in the demand for money and by making use of open market operations, the discount rate, and reserve requirements – has the ability to adjust the economy's overall volume of money so as to bring it to that particular level corresponding to its policy objectives. *This is completely refuted by all Post Keynesian economists* (Rousseas, 1986).
- A complete theory of endogenous money supply entails: (i) the rejection of the notion of the natural tendency toward a long-run full-employment equilibrium – or the acceptance of inherent instability of capitalism; (ii) the rejection of the stability of the income velocity of money and of its independence on the rate of interest – accepting that the demand for money is an unstable function of real income, and that the economy's financial structure is subject to continuous financial innovations in response to (tight) monetary policies; and above all, (iii) the rejection of the causal arrow of the quantity theory which goes from money supply to nominal income ($M \Rightarrow Y$) in favour of the opposite direction from nominal income to money supply ($Y \Rightarrow M$) (Rousseas, 1986, p. 73).
- While there is plenty historical evidence in support of (i) and (ii), it is the third point which generates the most profound debate among Post Keynesian economists. In the view of Rousseas (1986), the most extreme version of the third point refers to it as implying that: "…any increase in nominal income causes an increase in the supply of money sufficient to accommodate the resulting increase in the demand for money". He refers to "the most extreme" version as "*full accommodation*".
- All economic agents who accept credit money (bank deposits) in exchange for real and financial goods and services are indeed selling those goods and services on credit; and hence increasing their "convenience lending" to banks. It is precisely the fact that such "convenience lending" requires no sacrifice of consumption or investment expenditures, what

results in the absence of any need to incur additional interest "bribe"; "*There is no need for the supply of credit money to be upward sloping*" (Moore, 1988a,p. 382).

- For Moore (1988a), the money supply endogeneity is misunderstood by many who interpret it as implying the passivity of the central bank in the sense that the monetary authority is unable to affect the money growth. He argues that: "An endogenous money supply simply denotes that the money supply is determined by market forces" Moore (1988a, p. 384). In his view central banks are still capable of administering the level of short-term interest rates in an exogenous way. This is in turn, he argues, may still allow affecting the level of credit and money demanded and therefore, indirectly, the behaviour of money growth.
- "…A long-run money supply curve does not exist, since the level of interest rates cannot be specified independently of demand conditions. But the central point is that the short-run money supply curve is always horizontal…in the interest-money space, at a level of short term interest rates established by the central bank…" (Moore 1988a, p. 384).
- The Horizontalist Approach may be summarised as in Rochon (2001): (i) the direction of causality of the quantity theory is reversed so that it runs instead from firms' expected income to demand for credit, and then from money to effective income; (ii) the causality between reserves, deposits and loans is reversed so that loans create deposits and hence reserves are endogenous as in Pollin (1991), Lavoie (1992) and Eichner (1987); (iii) firms first finance production and then savings are generated, so that the direction of causality between savings and investment is as well reversed as in Kregel (1973), Davidson (1972) and Shapiro (1977); (iv) the interest rate is not determined by supply and demand schedules, and hence is exogenous as in Lavoie (1996), Hewitson (1995), Smithin (1994) and Wray (1995); and (v) the supply of credit is endogenous and money is a continuous credit-driven circular flow which is destroyed through the repayment of loans as in Eichner (1987), Lavoie (1992) and Parguez (1984, 1987).
- From the viewpoint of the Circuit approach, the existence of money requires: (i) the presence of a token currency (e.g. paper currency); (ii) the acceptance of money as a "means of final settlement"; and (iii) that money must not provide seignorage privileges to any payee. Graziani (1989) argues this is satisfied when payments are made by means of "promises of a third agent", namely banks. Thus, any monetary payment must involve a triangular transaction between a payer, a payee, and a bank.

- As sustained by Rochon (1997), credit is the starting point whose end is the destruction of money. The circuit period entails no time; investment plans leads to a demand for credit, this in turn, to money creation, and finally to the reimbursement of debt and destruction of money.
- Thus, bank credit is utilised in order to allow production take place, and savings as well as collections from sales are used as way of reimbursing the initial debt. For the Circuit Approach, when the circuit closes, the initial finance has already been used and destroyed so that new credit must be demanded and used in order to start a new cycle.
- Rousseas (1986, 1989) proposes a less extreme Post Keynesian approach to the endogenous money supply. He argues that the theory of endogenous money supply must incorporate changes in the velocity of circulation as part of its rationalisation.
- He suggests a different graphical representation than the horizontal Post Keynesian approach and the vertical Monetarist approach. Following diverse contributions by Minsky, changes in velocity in response to higher interest rates are decomposed. On the one hand, movements along the velocity curve are considered as a demand-side result from the activation of idle balances and the economising of transaction balances. On the other, shifts of the velocity curve represent supply-side financial innovations taking place during long-lasting expansions, or simply as a reaction to extremely tightening monetary policies.
- As argued by Wray (2004): “Moore’s horizontal loan supply curve is at a point in time, while theirs [the structuralists’] is a plot of interest rates over time. Moore’s horizontalism is not inconsistent with a rising mark-up over time as risks in the economy increase, and the structuralist concern with innovation and evolution of practice can be incorporated within Moore’s framework…the point that Hyman Minsky had tried to make is that over an expansion, and under some conditions, the balance sheets of both borrowers and lenders can become ‘stretched’ in such a way that loan rates tend to rise; this can be construed as either an upward sloping trend or as shifts due to rising risk”.
- Screpanti’s (1997) structural theory of endogenous money may be seen as a contribution towards a reconciliation of the Horizontalist and Structuralist positions. It considers the short-run adaptation of supply to demand at the expense of interest rate increases in the presence of expanding risk. He shows that as long as the time horizon is properly identified, the Horizontalist approach to endogeneity becomes comparable to the accommodative approach. Moreover, he argues that, while in the short-run, supply could fully accommodate demand if banks are sluggish in modifying rates, in the long-run, the same could occur when central banks are

unwilling to repress the banking system, or simply when financial innovations emerge as a reaction to monetary tightening.

8. Further Research

Clearly, there remain many potential areas of research associated with the study of endogenous money and banking. This section proposes some of the several possible investigations. One prospective area of research may be that leading to a deeper analysis regarding the adaptation of the money supply to demand, perhaps, as in the framework presented in Screpanti (1993, 1997) in which a reformulation of Kalecki's increasing risk hypothesis have proved to be crucial. Following the contributions by Minsky, a more insightful study of the cyclical evolution of the balance sheets of the average firm and the individual bank, will certainly lead to a deeper understanding of the implications of Minsky's financial instability hypothesis, and thus to a clearer interpretation of the consequences of increasing financial fragility.

As previously argued throughout this paper, banks' primary role, namely the creation of money, coexists with a secondary role associated with financial intermediation. Thus, the study of the interrelations among the two functions may contribute for the explanation of the adaptation of money supply to demand, perhaps by incorporating a more profound analysis of the role of bank liability and asset management.

Additionally, research conducted on the implications regarding the complexities of the institutional relations between banks, the rest of the financial sector, the central bank, and the fiscal sector, might be of great significance for both, the determination of the interest rate mark-up, and the overall level of the money supply.

Some economists argue that since 1973 with the collapse of the Bretton Woods agreement, several elements including the privatisation of the exchange rate risk (Eatwell and Taylor, 2000) have contributed to the continuing and accelerating growth of international capital markets. Many other Post Keynesians argue as well that money creation might not only respond to the demand for finance associated with real investment and production, but that it might react as well to financial speculative activities. Additionally, it is argued by Moore (1988a), Mata (2003), Wray (2004) and many other authors that the complexities regarding the exchange rate system are extremely relevant, as the short-term interest rate might become endogenous in the face of exchange rate pegging or fear of floating. Thus, the complexities of the coexistence of productive and financial speculative activities may prove as well to

be a motivating research. Finally, the study of the evolutionary stability of banks and the co-evolution of international banking and money may lead to interesting results.

REFERENCES

Arrow, K.J. and Hahn, F. (1971). *General Competitive Analysis*, Holden Day, San Francisco.

Arestis, P. (1992), *The Post-Keynesian Approach to Economics: an alternative analysis of economic theory and policy*, Edward Elgar, Aldershot.

Akerlof, G.A. (1970), "The Market for Lemons: Quality Uncertainty and the Market Mechanism", *Quarterly Journal of Economics*, Vol. 84, 488–500.

Bhattacharya, Sudipto, and Anjan V. Thakor (1993), "Contemporary Banking Theory", *Journal of Financial Intermediation* 3, 2–50.

Benston, G.J., and Smith, C.W. Jr. (1976), "A Transaction Cost Approach to the Theory of Financial Intermediation", *Journal of Finance*, 31, 215-231.

Bowles, Samuel (2004), *Microeconomics: Behavior, Institutions and Evolution*, Princeton University Press.

Broecker, Thorsten (1990), "Credit-Worthiness Tests and Interbank Competition", *Econometrica*, 58(2), 429-452.

Calomiris, C.W., and C.M. Kahn (1991), "The Role of Demandable Debt in Structuring Optimal Banking Arrangements", *American Economic Review* 81(3): 497-513.

Cencini, A. (1984), *Time and the Macroeconomic Analysis of Income*, F. Pinter: London.

—(1988), *Money, Income and Time. A Quantum-Theoretical Approach*, Pinter Publishers: London and New York.

Davidson, Paul (1972), *Money and the Real World*, Halstead Press. New York.

—(Winter 1982-83), "Rational Expectations: a fallacious foundation for studying crucial decision-making processes", J*ournal of Post Keynesian Economics*, Vol. 5, No 2, 182-198.

—(1988), "Endogenous Money, the production process, and inflation analysis", *Economie Appliquèe*, Tome XLI, No. 1, 151-169.

Diamond, D. (1984), “Financial intermediation and delegated monitoring”, *Review of Economic Studies*, 51, 393-414.

Diamond, D., and Dybvig, P. (1983), “Bank runs, deposit insurance, and liquidity”, *Journal of Political Economy*, 91, 401-419.

Dymski, G. and Pollin, R. (1992), "Hyman Minsky as Hedgehog: The Power of the Wall Street Paradigm," (with G. Dymski), Steven Fazzari and Dimitri Papadimitriou, eds., *Financial Conditions and Macroeconomic Performance*: Essays in Honor of Hyman P. Minsky. M. E. Sharpe, 27-62.

Eatwell John, Lance Taylor (2000), *Global Finance at Risk: The Case for International Regulation*, The New Press, New York.

Eichner, A. (1987), *The Macrodynamics of Advanced Market Economies*, Armonk, NY: M. E. Sharpe.

Fama, E. (1980), “Banking in the theory of finance”, *Journal of Monetary Economics*, 6 (1), 39-57.

Forman, L., Groves, M. & Eichner, A. (1985). “The demand curve for money further reconsidered”, in: M. Jarsulic (Ed.) *Money and the Macro Policy* (Boston, Kluwer Nijkoff).

Freixas, Xavier, and Jean-Charles Rochet (1997), *Microeconomics of Banking*, MIT, Cambridge, MA.

Gale D. and Hellwig M. (1985), “Incentive-Compatible Debt Contracts: The One-Period Problem”. *Review of Economic Studies*, 52, 647-663.

García B., Ángel (2004), “Partial Dollarization: A currency-matching rule and its implications for monetary policy and welfare”, *Revista Venezolana de Análisis de Coyuntura*, Vol. X, No. 1, FACES, Universidad Central de Venezuela.

Gertler, M. and Gilchrist, S. (1993), “The role of credit market imperfections in the transmissions of monetary policy: arguments and evidence”, *Scandinavian Journal of Economics*, 95 (1), 43–64.

Graziani, Augusto (1989), “The Theory of the Monetary Circuit”, *Thames Papers in Political Economy*, Spring, 1-26.

Gurley, John G. and Edward S. Shaw (1960), *Money in a Theory of Finance*, Washington, DC: The Brookings Institution.

Hahn, F. H. (1981), *Money and Inflation*, Basil Blackwell, London.

Hewitson, G. (1995), "Post-Keynesian monetary theory: some issues", *Journal of Economic Surveys*, 9 (3), 285–310.

Hellwig, M. (1991), "Banking, Financial Intermediation and Corporate Finance" A. Giovannini and C. Mayer, (eds.), *European Financial Integration*, New York: Cambridge University Press.

Holmström, B., Tirole, J. (1997), "Financial intermediation, loanable funds, and the real sector", *Quarterly Journal of Economics* 112(3), 663-691.

Jarsulic, Marc (1989), "Endogenous credit and endogenous business cycles", *Journal of Post Keynesian Economics*, Vol. 12, No 1, 35-48.

Kaldor, Nicholas (1982), *The Scourge of Monetarism*, Oxford University Press, Oxford.

Kaldor, N. (1958), "Monetary policy, economic stability and growth: a memorandum submitted to the committee of the working of the monetary system (Radcliffe Committee)", 23 June, Reprinted in Kaldor (1964), *Collected Economic Papers*, Volume 3, Essays on Economic Policy 1 (London, Duckworth).

Kalecki, Michał (1937), "The Principle of Increasing Risk", *Economica*, 4, 440-447.

Keynes, John Maynard (1930), *A treatise on Money*, Macmillan, London.

—(1936), *The General Theory of Employment, Interest and Money*, Harcourt, Brace and Howe, NY.

—(1937a), "The General Theory of Employment", *Quarterly Journal of Economics*, February.

—(1937b), "Alternative Theories of the Rate of Interest", *Economic Journal*, June.

—(1937c), "The "Ex-ante" Theory of the Rate of Interest", *Economic Journa*l, December.

—(1973). *The Collected Writings of John Maynard Keynes*, vol. XIII and XIV. London: Macmillan.

Krasa, Stefan and Anne P. Villamil. (1992) "Monitoring the Monitor: An Incentive Structure for a Financial Intermediary". *Journal of Economic Theory*, 57: 197–221.

Kregel, J. (1973), *The Reconstruction of Political Economy: an introduction to Post-Keynesian theory*, Macmillan, London.

Lavoie, M. (1992), *Foundations of Post Keynesian Economic Analysis*, Edward Elgar,

Aldershot.

— (1996), "The endogenous supply of credit–money, liquidity preference and the principle of increasing risk: horizontalism versus the loanable funds approach", *Scottish Journal of Political Economy*, 43(3), 275–300.

Leland, H. E. and D. H. Pyle (1977), "Informational Asymmetries, Financial Structure, and Financial Intermediation", *Journal of Finance*, 32, 371-387.

Mata Mollejas, L. (2003), "Bimonetarismo: Opción sub óptima para América del Sur", *Revista Venezolana de Análisis de Coyuntura*, Vol. IX, No. 1, FACES, Caracas.

—(2006), *Teoría del Preajuste Financiero*, Trópykos, CEAP, Universidad Central de Venezuela, Caracas.

Minsky, H.P. (1957a), "Central Banking and Money Market Changes", *Quarterly Journal of Economics*, Vol. 71,171-187.

—(1957b), "Monetary Systems and accelerator models", *American Economic Review*, 47, 859-883.

—(1991), "The endogeneity of Money", Edward J. Nell and Willi Semmler (eds), *Nicholas Kaldor and Mainstream Economics*, Chapter 11, Macmillan, London, 207-220.

Moore, B. J. (1983), "Unpacking the post Keynesian black box: bank lending and the money supply". Journal of Post Keynesian Economics, Vol. 5, No 4, 537-556.

—(1985), "Wages, Bank Lending and the Endogeneity of Credit Money", M. Jarsulic (ed.), *Money and Macro Policy*, Hingham, MA: Kluwer-Nijhoff.

—(1988a), "The endogenous money supply", *Journal of Post Keynesian Economics*, Vol. 10, No 3, 372-385.

—(1988b), *Horizontalists and Verticalists: the macroeconomics of credit money*, Cambridge: Cambridge University Press.

Moore, B. (1989), "A simple model of bank intermediation", *Journal of Post Keynesian Economics*, Vol. 12, No 1, 10–28.

—(1991), "Money supply endogeneity: 'reserve price setting' or 'reserve quantity setting', *Journal of Post Keynesian Economics*, Vol. 13, No. 3, 404, Spring 1991.

—(1996), "The money supply process: a historical reinterpretation", E. Nell and G. Deleplace (Eds), *Money in Motion*, Macmillan, London.

Musella, M., Panico, C. (1993), “Kaldor on endogenous money and interest rates”, Mongiovi G., Ruhl C., *Macroeconomic Theory: Diversity and Convergence*, Aldershot: Elgar, 37-63.

Palley, T. (1991), “The endogenous money supply: consensus and disagreement”, *Journal of Post Keynesian Economics*, Vol. 13, No. 3, 397–403.

Parguez, A. (1975), "Monnaie et Macroéconononomie", *Economica*, Paris.

—(1981), “Ordre Social, Monnaie, et Régulation”, *Économies Appliquée*, No. 2-3.

—(1984), “La dynamique de la monnaie”, *Économies et Sociétés, Monnaie et Production*, 2, 83–118.

—(1987), “La crise dans le circuit, ou l’intégration de la finance et de la production”, *Économie Appliquée*, 40 (4), 755–770.

Pasinetti, L. (1974), *Growth and Income Distribution: essays in economic theory*, Cambridge: Cambridge University Press.

Pollin, R. (1991), “Two theories of money supply endogeneity: some empirical evidence”, *Journal of Post Keynesian Economics*, Vol. 13, No 3, 366–95.

Ramakrishnan, R. T. S. and A. V. Thakor (1984),“Information reliability and a theory of financial intermediation”, *Review of Economic Studies* 51, 415-432.

Robinson, Joan, and Eatwell, John (1973), *An Introduction to Modern Economics*, McGraw-Hill, New York.

Rochon, L. P. (1997). “Keynes’s finance motive: a re-Assessment. Credit, liquidity preference and the rate of interest”. *Review of Political Economy*, 9(3), pp. 277–293.

—(1999), *Credit, Money and Production: an alternative Post-Keynesian approach*, Edward Elgar, Cheltenham.

—(2001), “Cambridge’s Contribution to Endogenous Money: Robinson and Kahn on credit and money”, *Review of Political Economy*, 13 (3), 287-307.

Rousseas, Stephen (1986), *Post Keynesian Monetary Economics*, M. E. Sharpe, New York.

—(1989), “On the endogeneity of Money Once More”, *Journal of Post Keynesian Economics*, Vol. 11, No. 3, 474–478.

Schmitt, B. (1984), "Inflation, chômage et malformations du capital", *Economica*, Pa-

ris.

—(1986), “Introduzione”, *Introduction to the Italian edition of the Monetary Writings*, of D. Ricardo, Istituto per l´Enciclopedia Italiana, Rome.

Screpanti, Ernesto (1993), “Capital Accumulation and the Monetary Circuit”, Dynamis, *Quaderno* No. 5/93, IDSE, Milan.

—(1995), “Relative Rationality, Institutions and Precautionary Behaviour”, *On Economic Institutions and Institutional Change*, J. Groenewegen, C. Pitelis and S.-E. Sjöstrand (eds.), Elgar, Aldershot.

—(1997), “Banks, Increasing Risk, and the Endogenous Money supply”, *Economic Notes*, Vol. 26, No. 3.

Shapiro, N. (1977), “The revolutionary character of Post-Keynesian economics”, *Journal of Economic Issues*, 11 (3), 541–560.

Smithin, J. (1994), *Controversies in Monetary Economics: ideas, issues and policy*, Edward Elgar, Aldershot.

Stahl, D.O. (1988), “Bertrand Competition for Inputs and Walrasian Outcomes”, *American Economic Review*, 78, 189-201.

Spence, M. A. (1973), “Job Market Signaling”, *Quarterly Journal of Economics*, 87 (3), 355-374.

Targetti, F. (1992), *Nicholas Kaldor: the economics and politics of capitalism as a dynamic system*, Oxford, Clarendon Press.

Townsend, R. (1979), “Optimal Contracts and Competitive Markets with Costly State Verification”. *Journal of Economic Theory*, XXI, 265-293.

Thirlwall, A. (2000). Preface, in: L.-P. Rochon and M. Vernengo (Eds.), *Credit, Interest Rates and the Open Economy: essays on horizontalism* (Cheltenham, Edward Elgar).

Weintraub, Sidney (1978a), *Keynes, Keynesians, and Monetarists*, Philadelphia: University of Pensilvania Press.

—(1978b), *Capitalism’s Inlfation and Unemployment Crisis*, Reading, Mass.: Addison-Wesley.

Wicksell, Knut (1898), *Geldzins und Guterpreise*, G Fischer Verlag: Jena, Published in English as Interest and Prices (1934), Macmillan, London.

Wray, L. Randall (1992), "Minsky's Financial Instability Hypothesis and the Endogeneity of Money", *Financial Conditions and Macroeconomic Performance*: Essays in Honor of Hyman P. Minsky. Steve Fazzari and Dimitri Papadimitriou (eds), Armonk, NY: M. E. Sharpe, 161-180.

Wray, R. (1995), "Keynesian monetary theory: liquidity preference or black box horizontalism", *Journal of Economic Issue*s, 29 (1), 273–282.

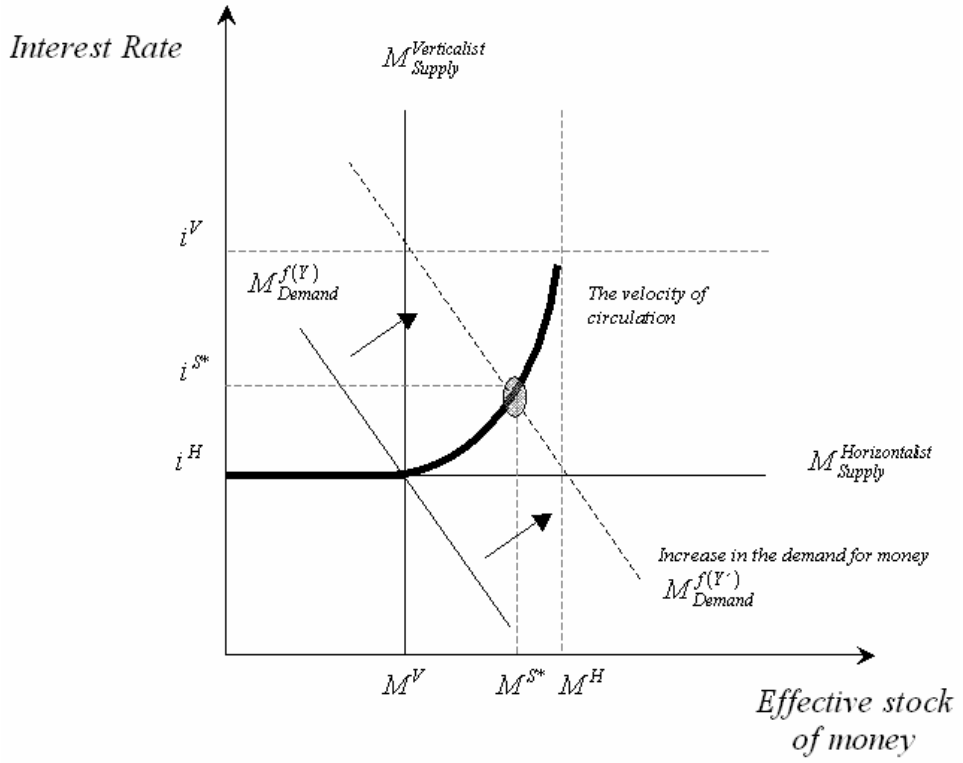
—(1999), *Understanding Modern Money: the key to full employment and price stability*, Edward Elgar, Cheltenham.

—(2004), "When Are Interest Rates Exogenous?" Center for Full Employment and Price Stability, *Working Paper No. 30*, Paper for a conference in honor of Basil Moore: Complexity, endogenous money, and exogenous interest rates, January 7-11, 2004, Stellenbosch, South Africa.

Yanelle, M-O. (1989), "The Strategic Analysis of Intermediation", *European Economic Review*, 33, 294-301.

APPENDIX

Graphical Representation of the Endogenous Money Supply when changes in velocity are incorporated (Rousseas, 1986):


Interest Rate
$M^{Verticalist}_{Supply}$
i^V
$M^{f(Y)}_{Demand}$
The velocity of circulation
i^{S*}
i^H
$M^{Horizontalist}_{Supply}$
Increase in the demand for money
$M^{f(Y')}_{Demand}$
M^V
M^{S*}
M^H
Effective stock of money

Revista BCV • Vol. XXI, N° 1. Caracas, enero-junio 2007, pp. 109-142 • ISSN: 0005-4720

La integración financiera latinoamericana a la luz de la experiencia europea

Sary Levy Carciente*

Ángel G. García**

Resumen

Más allá de la Teoría de Zonas Monetarias Óptimas, este trabajo presenta un análisis acerca de los costos y beneficios de la integración regional. En relación al caso de la Unión Europea, se estudian las consecuencias y justificaciones detrás de los criterios de convergencia nominal en materia de tasas de inflación, tipos de interés, tasas de cambio, déficit fiscal y endeudamiento público, variables fundamentales en el proceso de integración monetaria y financiera. A la luz de la experiencia europea, el trabajo aborda igualmente los procesos de integración latinoamericano a partir de la óptica de sus flujos financieros con la finalidad de extraer enseñanzas que alimenten con recomendaciones a los hacedores de política, tomando en cuenta las implicaciones hacia adentro

* Doctora en Economía, Universidad Central de Venezuela. Directora del Instituto de Investigaciones Económicas y Sociales y Coordinadora de Investigaciones de la Facultad de Ciencias Económicas y Sociales de la Universidad Central de Venezuela.
Correo electrónico: econofin@cantv.net, www.sarylevy.com, www.faces.ucv.ve/instituto.

** Candidato al doctorado en Economía Política, Universidad de Siena, Italia. Magíster en Economía Política de la Universidad de Siena, Magíster en Economía y Finanzas de la Universidad de Warwick, Inglaterra. Economista, Profesor e Investigador de la Universidad Central de Venezuela, Centro de Estudios del Desarrollo (Cendes). Visitante Académico en el New School for Social Research, Nueva York, Estados Unidos. Correos electrónicos: angelgarcia_vzla@yahoo.com, garcia@unisi.it

(procesos de crecimiento y desarrollo) y hacia fuera (con terceros). Se deduce que la integración en el plano financiero puede concretarse a partir de esfuerzos formales destinados a tal fin, pero también puede emerger sin acuerdos preexistentes como resultado del interés de actores internacionales en un mercado en particular. La integración informal ha sido el caso más común en la región latinoamericana; y si bien esta ha permitido cierto aprovechamiento para la región en esta área, es aún largo el trayecto que resta por recorrer.

Palabras clave: Integración regional / Finanzas / Flujos de capital / Latinoamérica

Código JEL: E5, F1

Abstract

Beyond the Theory of Optimal Monetary Zones, this work presents an analysis about the costs and benefits of regional integration. In relation to the case of the European Union, we study the consequences and justifications behind the nominal convergence criteria in the matter of inflation rates, interest types, exchange rates, fiscal deficit and public indebtedness, basic variables in the monetary and financial integration process. In the light of the European experience, the work also deals with the Latin American integration processes based on the point of view of its financial flows, in order to draw lessons that would feed the policy makers with recommendations, taking into account the implications to the inside (in the growth and development processes), and to the outside (in the relationship with third parties). It is deduced that integration in the financial field could be realized through formal efforts made towards that end, but it could also emerge with no preexisting agreements, as the result of the interest of international actors in a particular market. Informal integration has been the most common case in the Latin American region; and even though it has allowed for certain good use of this area by the region, the path leading to this goal is still long.

Keywords: Regional integration / Finances / Capital flows / Latin America

JEL Code: E5, F1

Resumo

Além da Teoria de Zonas Monetárias Ótimas, este trabalho apresenta uma análise sobre os custos e benefícios da integração regional. Em relação com o caso da União Européia, se estudam as conseqüências e justificações por trás dos critérios de convergência nominal em matéria de taxas de inflação, tipos de interesse, taxas de câmbio, déficit fiscal e endividamento público, variáveis fundamentais no processo de integração monetária e financeira. À luz da experiência européia, o trabalho aborda igualmente os processos de

integração latino-americano a partir da óptica dos seus fluxos financeiros com a finalidade de extrair ensinamentos para alimentar com recomendações os fazedores de política, levando em conta as implicações para dentro (nos processos de crescimento e desenvolvimento) e para fora (na relação com terceiros). Deduz-se que a integração no plano financeiro pode se concretizar a partir de esforços formais destinados para tal fim, mas também pode emergir sem acordos preexistentes como resultado do interesse de atores internacionais num mercado em particular. A integração informal tem sido o caso mais comum na região latino-americana; e se bem este tem permitido certo aproveitamento para a região nesta área, o trajeto que resta por percorrer é ainda muito longo.

Palavras chave: Integração Regional / Finanças / Fluxos de Capital / América Latina

Código JEL: E5, F1

Résumé

Bien au delà de la théorie de zones monétaires optimales, ce travail présente une analyse des coûts et des bénéfices de l'intégration financière régionale. Par rapport au cas de l'Union européenne, l'on étudie les conséquences et les justifications sous les critères de convergence nominale à l'égard des taux d'inflation, des types d'intérêt, des taux d'échange, du déficit fiscal, et de l'endettement public, qui sont des variables fondamentales dans le processus d'intégration monétaire et financière. Selon l'expérience européenne, ce travail porte également sur les processus d'intégration latino-américain sous l'optique de ses flux financiers afin de tirer des leçons et des recommandations utiles pour les législateurs, tenant compte des implications à l'intérieur (dans les processus de croissance et développement) et à l'extérieur (par rapport aux tiers). Il est conclut que l'intégration dans le domaine financier peut effectivement se réaliser a partir des efforts formels, mais elle peut surgir aussi sans aucun accord préalable comme un résultat de l'intérêt d'acteurs internationaux dans un marché particulier. L'intégration informelle a été le cas le plus commun dans la région latino-américaine, et même si elle a représenté une mise en valeur de la région dans ce domaine, il reste encore un long chemin à parcourir.

Mots clés: Intégration régionale / Finances / Flux de capital / Amérique latine

Code JEL: E5, F1

Introducción

Una de las preocupaciones centrales del pensamiento económico es el tema del crecimiento como mecanismo para acceder a mayores estadios de bienestar, aún cuando su discusión conduzca a distintas interpretaciones y planteamientos de política en reflejo de los diversos paradigmas teóricos y epistemológicos. Asimismo, la evolución del análisis tendría como desencadenantes tanto sucesos históricos como exigencias sociales y desarrollos intelectuales. En algunas oportunidades, las preocupaciones surgirían con anterioridad o con la suficiente prontitud a las necesidades, mientras que a veces requerirían décadas para ser entendidas o adoptadas.

Ante las limitaciones que en determinado momento o por diversas circunstancias presentan las economías nacionales para el crecimiento, se ha planteado el apoyo que pudiesen brindar terceros para su consecución. La relación que una economía establece con terceros puede verse a partir de distintas aristas, como son: el comercio de bienes y servicios, el flujo de capitales, el movimiento de mano de obra, la relación cambiaria, etc.; todas ellas claramente imbricadas. De igual manera, esta relación con terceros puede verse afectada o desdibujada (positiva o negativamente) a partir del entorno institucional en el cual se desenvuelva, siendo los procesos de globalización e integración los de más evidente impacto en el presente y pasado reciente.

El ámbito financiero es elemento de relevancia indiscutible en la concreción de programas de crecimiento y desarrollo, aunque desde el punto de vista de la agenda en los procesos de integración tiende a ser uno de los pasos finales. Los acuerdos de integración no son fáciles. Sus caminos son pedregosos y sólo la claridad de las naciones acerca de los beneficios finales –frente a costos de corto plazo– puede asegurar su concreción.

Específicamente en Latinoamérica, en una etapa en la cual muchos preveían la profundización de todos los acuerdos de integración y la posible fusión de algunos de ellos, se han observado importantes conflictos: los pequeños del Mercado Común del Sur (Mercosur) están incómodos con su participación, proyectos específicos generan conflictos mayores entre sus integrantes y se plantea la vinculación con países fuera del esquema integracionista como mecanismo para aminorar asimetrías. El anuncio de la salida de Venezuela de la Comunidad Andina de Naciones (CAN) de alguna manera afecta al antiguo Acuerdo de Cartagena al cual ahora pareciera se adherirá Chile, mientras Colombia, Perú y Ecuador evalúan la firma de tratados bilaterales con países fuera de la Comunidad. Por su parte, Venezuela se incorpora al Mercosur y promueve desde el poder ejecutivo esquemas de integración con énfasis particular en el ámbito político.

Dado el estrecho vínculo entre el ámbito financiero y el tema del crecimiento y desarrollo económico, emerge la importancia de revisar el estado de integración

financiera alcanzado por la región latinoamericana para evaluar sus logros y dificultades, y extraer enseñanzas que guíen a los hacedores de políticas públicas y a los dirigentes de la región en los difíciles avatares que suponen los acuerdos de integración.

Igualmente, es importante considerar la experiencia de integración en otras regiones y, en particular, la experiencia reciente en el caso europeo, sin que ello implique considerársele como un caso modelo, dada las grandes diferencias existentes en materia de convergencia, desarrollo económico, rasgos culturales y tradiciones históricas de los distintos países y regiones.

El trabajo ha sido estructurado de la forma siguiente: una sección que estudia algunos antecedentes fundamentales en distintos procesos de integración regional. Otra que analiza cuáles son los factores esenciales que impulsan la integración. Una siguiente parte que rescata algunos de los aprendizajes fundamentales acumulados desde inicios del proceso de unificación monetaria y financiera a nivel europeo. Otra parte que examina el comportamiento reciente de los flujos financieros latinoamericanos, y finalmente una última sección que presenta algunas reflexiones finales.

Integración regional: Antecedentes

Los esquemas de integración regional se han multiplicado en el pasado reciente, y su importancia en lo que a comercio internacional, flujos de capital y política se refiere es cada vez mayor. Sin embargo, la integración regional no es un fenómeno nuevo. Ejemplos de Staatenbünden, Bundesstaaten, Eidgenossenshaften, ligas, Commonwealths, uniones, asociaciones, pactos, confederaciones consejos y otros similares se han observado a lo largo de la historia.

La primera integración voluntaria en la historia aparece claramente documentada en el siglo XIX. En 1828, Prusia establece una unión aduanera con Hesse-Darmstadt. Posteriormente, en la búsqueda de la constitución de un estado alemán, tienen lugar la Unión Aduanera de Bavaria-Württemberg, la Unión Comercial de Alemania Central (German Zollverein), la Unión Impositiva de Alemania del Norte, la Unión Monetaria Alemana y finalmente el Reich Alemán.

Esta ola integracionista se expande a lo que se convertirá en Suiza, cuando en 1848 se crea el mercado integrado y la unión política suiza. De igual manera ocurre en Italia con el movimiento del Resurgimiento *(Risorgimento)*. La fiebre integracionista ataca nuevamente a Europa en la última década del siglo XIX: El Conde Paul Leusse en Francia insiste en el establecimiento de una unión aduanera agrícola entre Francia y Alemania con un comité de aranceles a establecerse en Frankfurt, tras lo cual habrían otros países considerando su membresía: Holanda, Bélgica, Suiza, Austria-Hungría, España e Italia.

En Austria el político y economista Alexander Peez planeó una Unión Europea Central (Middle European Zollverein) la cual incluía a Francia. Medio siglo después la idea integracionista fue repensada y el proceso de integrar estados-nación europeos en una economía próspera y de estabilidad política se inició: el primer paso fue la creación de la Comisión Europea del Carbón y el Acero (CECA) en 1952, seguido por la firma del Tratado de Roma en 1957 tras lo cual nacería la Comunidad Europea la cual desde entonces crece y se profundiza hasta llegar al nivel de Unión Monetaria (Mattlli, 1999).

Si como hemos señalado, la integración no es nueva, tampoco tiene un arraigo territorial específico:

- En Asia el esquema de integración más conocido es la Asociación de las Naciones del Sudeste Asiático –Asean (1967)– la cual se profundiza hasta convertirse en un área de libre comercio en 1992. Lanzado por Australia, Nueva Zelanda, Japón, Corea del Sur, Canadá, EE UU y los países de la Asean, surge, posteriormente en el año de 1989, el APEC (Asia Pacific Economic Cooperation Forum), contando hoy día con 18 países miembros. Más recientemente, Malasia promovió el EAEG (East Asian Economic Grouping), una agrupación de países asiáticos con eje japonés.
- En África el regionalismo tampoco es un fenómeno nuevo, más aún, la unión aduanera más antigua del mundo es sudafricana y el continente tiene un largo registro de acuerdos económicos. Ejemplo de ellos son: Ecowas en África occidental (Economic Community of West African States), Eccas en África central (Economic Community of Central African States), SADC en la región del sur (Southern African Development Community), UMA (Arab Maghreb Union) en el norte africano, EAC (East Africa Community) en la región oriental y Comesa (Common Market for East and Southern Africa) como mercado común sudoriental.

  Además de estos acuerdos regionales existen otras agrupaciones como UEMOA (Union Économique et Monétaire Ouest-Africaine) de carácter económico-monetario, Udeac de carácter económico-comercial (Union Douaniere et Économique de l'Afrique Centrale), la unión aduanera SACU (Southern African Customs Union), y zonas monetarias para el Rand y Franco tales como CMA (Common [Rand] Monetary Area) y CFA (Common Franc Zone), respectivamente.
- En el continente americano han hecho presencia la Asociación Latinoamericana para el Libre Comercio (Alalc), la Asociación Latinoamericana de Integración (Aladi), el Acuerdo de Cartagena (luego Pacto Andino y ahora Comunidad Andina de Naciones CAN), el Mercado Común Centroamericano (MCCA), el Mercado Común de la Comunidad del Caribe, (Caricom-Caribbean Community and Common Market), el Mercado Común del Sur (Mercosur),

el Tratado de Libre Comercio de América del Norte (Tlcan) y el Acuerdo de Libre Comercio Centroamericano (Cafta, Central American Free Trade Agreement o DR-Cafta cuando este incluye a República Dominicana).

También se han firmado acuerdos entre distintos países de la región, como el G-3, en busca de complementariedades, de profundización de relaciones económicas y del establecimiento de acuerdos monetarios como es el caso de la Organización de Estados del Caribe Oriental (OECO)[1]. Asimismo, en los años noventa surgen la propuesta del Acuerdo de Libre Comercio de América (ALCA) el cual integraría desde Alaska hasta la Patagonia todo el continente del hemisferio occidental y su contrapropuesta política, la Alternativa Bolivariana para las Américas (ALBA).

¿Qué impulsa la integración?

> *…hay una forma de observar, interpretar u organizar la evidencia la cual revelará que diversos fenómenos superficialmente desconectados son manifestación de una estructura más fundamental y simple.*
>
> [Friedman, M., 1953:33][2]

Visto el importante número de ejemplos integracionistas, es obligatorio preguntarse qué impulsa la integración voluntaria entre naciones, ya que al parecer existe una lógica que la promueve. Plantear que existen regularidades no niega las complejidades del fenómeno ni desdeña las diferencias que subyacen en los casos a estudiar, pues la integración regional es producto de una diversidad de fuerzas: nacionales, internacionales, institucionales, económicas, políticas y militares. Asimismo, los procesos de integración han sido revisados partiendo de distintas perspectivas disciplinarias con especial atención de la Ciencia Política y la Ciencia Económica. Desde la perspectiva política destacan los aportes funcionalistas, neofuncionalistas e intergubernamentalistas, mientras que desde la ciencia económica son notables las teorías de las uniones aduaneras y de las zonas monetarias óptimas (Mattli, 1999; Mansfield & Milner, 1997).

---

1 La OECO fue constituida el 2 de julio de 1981 por las islas: Antigua y Barbuda, Dominica, Granada, Las Granadinas, Montserrat, San Cristóbal y Nevis, Santa Lucía y San Vicente: (http://www.imf.org/external/np/sec/decdo/oecs.htm). Es una unión monetaria cuya moneda es el dólar del caribe oriental, emitida por el Eastern Caribbean Central Bank (ECCB), el cual ha logrado que esta moneda mantenga una paridad estable.

2 "…there is a way of looking at or interpreting or organizing the evidence that will reveal superficially disconnected and diverse phenomena to be manifestation of a more fundamental and relatively simple structure" [traducción propia].

Por un lado, el funcionalismo hace énfasis en el proceso gradual de cooperación con miras a la integración, partiendo del punto de vista de que las divisiones políticas no son sino fuente de conflictos entre las naciones (Mitrany, 1966). Por su parte, el neofuncionalismo, con énfasis en los aspectos institucionales, describe el proceso dinámico por medio del cual los distintos actores, altamente interdependientes, logran obtener del proceso de integración mayores beneficios (Haas, 1958-1964).

Se podría señalar que estas perspectivas subyacen en aquellas explicaciones que, con mayor énfasis en la experiencia que en la teoría al explicar el exitoso caso europeo, insisten en señalar que tras la segunda posguerra se intentó desarrollar un esquema innovador de gobierno en la región. En algún sentido la creación de la CECA respondería a este planteamiento para controlar recursos que pudieran encauzarse en la guerra. Igualmente, vale recordar que en los años sesenta surge un esquema de integración paralela: la Asociación para el Libre Comercio Europeo (EFTA) y con objetivos más asociados al incremento de relaciones comerciales.

Por su parte el intergubernamentalismo plantea que la integración es producto del acuerdo de líderes, quienes fungen como actores centrales en la negociación de acuerdos (Grieco, 1997). Este grupo de explicaciones se centra en el estudio del liderazgo político y en cómo ciertos líderes se imponen a perspectivas estrechas y parroquiales nacionales, favoreciendo la complementariedad de mayores regiones para el cumplimiento de proyectos más ambiciosos. Estos pueden tener diferente cariz, desde aquellos que se centran en el incremento del bienestar económico de las poblaciones hasta aquellos que promueven esquemas políticos para los distintos gobiernos o relaciones de alianza militar entre los mismos.

Finalmente, otro grupo de análisis se centra en la necesidad que tiene la producción nacional de realizarse, de trascender sus fronteras, de buscar socios comerciales sea para la producción, la distribución o la realización de la producción.

Desde el artículo seminal de Viner (1950) sobre uniones aduaneras[3], seguido por los estudios de Meade (1955), Lipsey (1960) y Russett (1967), mucho se ha escrito sobre las ventajas de los esquemas de integración comercial. Krugman

[3] La contribución pionera de Jacob Viner (1950) analiza los efectos del establecimiento de una unión aduanera producto de la liberación interna del mercado de bienes y de la imposición de un arancel externo común. El primero de los efectos, denominado "creación de comercio", está asociado a la substitución de la producción doméstica de costo elevado por importaciones de menor costo provenientes del resto de la unión aduanera, lo cual, desde el punto de vista de la eficiencia, conduciría a una mejor asignación internacional de los recursos y, por ende, a un aumento del bienestar. Por el contrario, el segundo efecto, denominado "desviación de comercio", supone una disminución del bienestar asociada a la substitución de importaciones de menor costo, antiguamente provenientes de economías no

(1984) en su planteamiento del "viceóptimo", destaca que hay aspectos de la economía real que se alejan del terreno de lo ideal y que, aunque fuera deseable, no es posible su consecución. Su nombre se deriva del hecho de considerarse necesaria la búsqueda de una "segunda mejor opción", cuando la economía no está funcionando a su nivel óptimo. Esta opción no es otra que *la integración*. Pero trabajos posteriores del mismo autor (1992) han mostrado que no todos los efectos positivos esperados de la integración se realizan, mientras se generan desbalances sectoriales y asimetrías regionales.

Otros autores se han adentrado en el estudio de las uniones monetarias partiendo del análisis inicial realizado por Mundell (1961) sobre áreas monetarias óptimas[4]. De Grauwe (1997), por ejemplo, insiste en el impacto de las diferencias en la inflación, las características institucionales y el sistema fiscal para su viabilidad.

Esta perspectiva de análisis se ve remarcada por la creciente interrelación en los llamados procesos de globalización, donde la integración se convierte en un esquema de inserción protegida en la búsqueda de espacios que permitan encontrar nichos de mercados favorables al desarrollo de ciertos productos en un ambiente de producción en masas y a bajos costos; esquemas en sintonía con el avance de la tecnología en cibernética y telecomunicaciones y su impacto en los flujos de capital; y mecanismos que permitan la realización de productos y servicios propios, en el afán de favorecer el crecimiento económico para, finalmente, mejorar las condiciones de vida de las sociedades.

---

pertenecientes a la unión aduanera, por importaciones de mayor costo provenientes de economías que pertenecen a la misma. Por su carácter estático, el modelo de Viner no considera los efectos dinámicos del comercio sobre el ritmo de la actividad económica, el nivel del empleo y la estabilidad económica en general.

[4] El trabajo de Mundell de 1961 establece las condiciones básicas de una zona monetaria óptima; entre otras, señala la plena o elevada movilidad de los factores productivos: capital, trabajo y tecnología. Mundell considera que los países que comparten una moneda única obtienen ventajas en términos de una mayor transparencia de precios, de menores costes de transacción, de menor incertidumbre para los inversores (al desaparecer los tipos de cambio) y de un aumento en el nivel de competencia. Una política monetaria única, instrumentada por un banco central independiente, aumentaría la estabilidad de los precios, aunque a un alto costo toda vez que los países perderían el control y manejo de los tipos de interés y de la política cambiaria. Así, para Mundell (1961), el éxito de una unión monetaria dependería del grado de flexibilidad de los precios y salarios como elemento de compensación por la desaparición de la flexibilidad o autonomía política en materia cambiaria y en lo relativo al manejo de los tipos de interés. En efecto, Mundell sostiene que dentro de una unión monetaria mientras la rigidez de precios y de salarios prevenga a los términos de intercambio de desempeñar su rol en el proceso de ajuste, las crisis de balanza de pagos serán recurrentes. En relación a lo anterior, las subsecciones "Acerca de los costos de la integración monetaria" y "Acerca de los beneficios de la integración monetaria" profundizan al respecto de los costos y beneficios de la integración monetaria, así como también de los beneficios asociados a la disponibilidad de mecanismos automáticos para la transferencia intraregional de recursos presupuestarios.

En el plano económico se podría señalar que el nivel de relación *ex ante* de las naciones es tan determinante para los procesos de integración como aquellos resultantes *ex post*, como consecuencia de los acuerdos. De igual manera resultan las similitudes en los niveles inflacionarios, la sensibilidad a los choques y la complementariedad de los sectores industriales así como también los niveles de armonización a nivel macroeconómico. Precisamente, en lo relativo a estos factores, la próxima sección estudia algunas de las particularidades del proceso europeo de integración.

Aprendizajes de la experiencia europea

A cinco décadas de la firma del Tratado de Roma de 1957, se puede afirmar que la experiencia de integración europea ha sido singular dada las diferencias existentes entre los países miembros. Tales diferencias incluyen entre otras: los distintos grados de convergencia inicial y de desarrollo económico, las características específicas, los rasgos culturales e idiomáticos y las diversas tradiciones históricas. Pese a tales diferencias, la experiencia de integración económica de esa región permite acumular aprendizajes de gran utilidad.

En particular, la experiencia europea sugiere que el progreso de la integración financiera depende en gran medida del avance gradual de las políticas de armonización en materia monetaria, financiera y de regulación. La cooperación entre entes de supervisión financiera y bancos centrales nacionales, y la armonización tanto en el ámbito de la regulación bancaria, como en el ámbito impositivo, han demostrado ser de carácter fundamental. Igualmente, la armonización de normas contables y de auditoría, al ofrecer un mayor nivel de transparencia y cotejo, han probado ser favorables al proceso de integración financiera regional (González, 2005).

Así, en materia de integración financiera se destacan dos elementos del proceso que han sido fundamentales en el caso europeo. Por un lado, el plan de acción para los servicios financieros firmado por las autoridades europeas, al establecer un marco jurídico que permite la unificación del mercado financiero regional, ha coadyuvado a la expansión de los servicios de la banca mayorista (González, 2005)[5]. Por otro lado, la adopción del euro como moneda única de carácter común a nivel regional ha sido determinante. Precisamente, la próxima sección estudia los costos y beneficios de la integración monetaria así como también las justificaciones y consecuencias detrás de las exigencias que en materia de convergencia nominal tuvieron lugar en el caso europeo a consecuencia del proceso de armonización de las políticas monetaria y financiera.

---

5 González (2005), señala en el caso del sector bancario minorista, que la cercanía al cliente persiste como factor fundamental, razón por la cual los servicios de pagos al por menor y los servicios de inversión y de seguros ofrecidos por el sector no se encuentran aún integrados a nivel europeo.

Acerca de los costos de la integración monetaria

Como se indicó anteriormente, en un área de integración es usual que persistan diferencias importantes entre países miembros, inclusive en el largo plazo. Tales diferencias se presentan con mayor fuerza en el ámbito cultural, en el sistema legal y contractual, en lo político, en lo fiscal, en el grado de flexibilización de los mercados laborales, en las preferencias del público por el desempleo y la inflación, y en el grado de credibilidad de las autoridades fiscales y monetarias, etc. (De Grauwe, 2003)[6].

Las economías que conservan cierto grado de autonomía en materia de decisiones de política económica, probablemente debido a su desvinculación con procesos de integración regional o, simplemente, debido al estado incipiente de los acuerdos comerciales y de integración, prefieren regularmente, con el propósito de lidiar con las diferencias anteriormente mencionadas, utilizar el instrumento cambiario evadiendo así recurrir a políticas ortodoxas de carácter antiinflacionario, las cuales, por demás, suelen ser mucho más costosas y dolorosas[7].

El caso anterior, evidentemente, no representa aquel asociado a las economías que forman parte de acuerdos con cierto grado de avance en materia de integración económica y política, e.g. los Estados Unidos de América y la Unión Europea, entre otros. En el interior de esas economías, vistas en conjunto, la posibilidad de hacer uso inmediato del instrumento cambiario para corregir diferencias en materia de inflación y desempleo es inexistente. La razón de lo anterior es que

---

6 Es lógico suponer que algunas de las diferencias existentes entre países miembros de un mismo esquema de integración tenderían a ser reducidas en la medida en que avancen los acuerdos y el propio proceso de integración. No obstante, aquellas diferencias restantes y persistentes ejercerían presiones diversas a favor de ajustes nacionales en materia de precios, del ritmo de actividad económica y otros. En este sentido, los acuerdos de integración y, en particular, los acuerdos de convergencia nominal y de unión monetaria traen consigo beneficios y costos cuya aceptación representan un riesgo calculado.

7 Definiendo el tipo de cambio de real, Q, como el precio relativo entre los productos transables nacional y extranjero, se tiene que: $Q = (E \times P^*) / P$, donde E se refiere al tipo de cambio nominal, y P^* y P al nivel precios externo e interno, respectivamente. Cuando debido a acuerdos de integración monetaria o de convergencia nominal, el instrumento cambiario, E, no puede ser utilizado para hacer frente a choques y perturbaciones asimétricas, la ortodoxia suele recomendar como instrumento de absorción políticas antiinflacionarias que persigan una desaceleración del diferencial entre las tasas de inflación interna y externa. Una alternativa menos costosa en términos de su efecto sobre el nivel de ocupación –aunque evidentemente contraria al pensamiento neoclásico, devoto de la flexibilidad de precios– es aquella usualmente planteada por la escuela de pensamiento postkeynesiano la cual favorece la instrumentación de una política de negociación de ingresos (o *incomes policy*) con el propósito de contener el aumento de los salarios, causa fundamental de la aceleración inflacionaria.

estas economías se encuentran vinculadas por acuerdos que originalmente perseguían objetivos de convergencia nominal hasta finalmente alcanzar la conformación de uniones monetarias (Mundell, 1961; McKinnon, 1963; Kenen, 1969).

En el caso de Latinoamérica y en particular en el caso de las subregiones CAN y Mercosur, dado el estado incipiente de desarrollo del proceso de integración político-económica y la ausencia de acuerdos de convergencia nominal, las experiencias asociadas a la devaluación monetaria en Brasil en 1999, la consecuente gran devaluación del peso argentino en el año 2000 y la fuerte devaluación que sufrió el bolívar venezolano a comienzos de 2002, dejan en evidencia como la preferencia de las autoridades ha sido recurrir a la utilización del instrumento cambiario al procurar evadir los mayores costosos asociados al sostenimiento de políticas antiinflacionarias de carácter eminentemente ortodoxo.

Si bien es cierto que la autonomía de decisión en la utilización del instrumento cambiario ha demostrado ser, desde el punto de vista de la economía nacional, un instrumento favorable tanto a la absorción suave y rápida de choques asimétricos como a la atenuación de aquellas diferencias regionales que afectan las capacidades de estabilización frente a choques simétricos, también es cierto que, desde el punto vista regional, las variaciones del tipo de cambio representan un elemento de distorsión a nivel macroeconómico. En este sentido, para la región en su conjunto, la conservación de la autonomía de decisión en la utilización del instrumento cambiario representa, en sí mismo, una fuente nominal o monetaria de choques asimétricos (De Grauwe, 2003).

En resumen, en virtud de los costos asociados al abandono del instrumento cambiario a raíz del proceso de convergencia nominal resultante del avance en los acuerdos de integración regional, las estrategias planteadas con el propósito de lidiar con choques asimétricos, costosos tanto para la economía nacional como para la región, divergen notablemente entre sí. Así, mientras la ortodoxia propone una mayor flexibilización del mercado laboral, el pensamiento heterodoxo, postkeynesiano, reclama un mayor liderazgo del Estado en la promoción de políticas de ingresos nacionales (o *incomes policy*) destinadas a contener la aceleración inflacionaria en el corto plazo (Colander, 1979; Appelbaum, 1982)[8].

Acerca de los beneficios de la integración monetaria

En relación a los beneficios asociados al proceso de convergencia nominal vinculado a la conformación de una integración monetaria y financiera, la reducción de los costos transaccionales en operaciones comerciales y financieras

[8] De esta forma, en el largo plazo, restaría como objetivo fundamental el fomento de la aceleración del proceso de unificación política con el propósito de disminuir las idiosincrasias nacionales y por ende el grado de frecuencia de las perturbaciones asimétricas que tienen como base el ámbito político-institucional.

se presenta como un elemento favorecedor del proceso de integración, toda vez que éste coadyuva a reducir la incertidumbre asociada a cambios en los precios relativos y, por tanto, acentúa las bondades del sistema de precios en el direccionamiento y la asignación de los recursos. Esto sin lugar a duda representa un factor propiciador de un mayor nivel de bienestar para las economías que forman parte del proceso de integración (Engel y Rogers, 1995)[9].

Si bien es cierto que, dentro de un área de integración, una mayor transparencia en la fijación de precios es probable que beneficie directamente a los consumidores, el origen del mayor beneficio no provendría directamente de la mayor transparencia en sí, sino más bien del efecto estimulador que ello provocaría sobre el propio proceso de integración en los sectores monetario financiero, político e institucional, etc. (De Grauwe, 2003).

Un beneficio en particular de la integración monetaria y financiera es que, en la medida en que la moneda regional comienza a ser demanda mundialmente, es de esperar que el mayor nivel de señoreaje y expansión financiera demuestren ser favorables a la región. No obstante, la experiencia de la Unión Europea (UE) ha demostrado que, la flexibilidad en la autodeterminación del momento preciso de incorporación al proceso de integración monetaria y financiera puede servir de elemento facilitador de las negociaciones.

Ciertamente, en el largo plazo, en la medida en que la unión monetaria y financiera sea mayor, los crecientes incentivos, y las externalidades positivas resultantes, servirán de factor catalizador para acelerar aún más el proceso de integración. En este sentido, un análisis de costo-beneficio acerca de la decisión de integración monetaria y financiera, aún cuando es relevante y adecuado para determinar el precio que algunos países tendrán que pagar, es regularmente insuficiente.

Integración europea y convergencia nominal

El proceso de convergencia nominal que ha culminado con la conformación de una unión monetaria en Europa puede ser divido en tres períodos fundamentales: el período durante el cual rigió el "Mecanismo de Tipo de Cambio", 1976-1998 o "Exchange Rate Mecanism (ERM)"; el período 1999-2001 o período del

---

9 Es pertinente aclarar, no obstante, que si bien el proceso de convergencia nominal que culmina con la eliminación de los tipos de cambio, representa una reducción del riesgo cambiario nominal, no necesariamente representa una reducción del riesgo cambiario real. La razón de la ambigüedad anterior estriba en el hecho de que aún en ausencia de variaciones en el tipo de cambio nominal, las fluctuaciones acentuadas en el diferencial de inflaciones interna y externa producto de escenarios político-sociales diversos podrían conducir igualmente a apreciaciones o depreciaciones del tipo de cambio real (véase la nota número 7).

"ECU" y el período 2002 hasta la actualidad durante el cual ha aparecido físicamente un nuevo signo monetario universal, es decir, el euro.

El proceso de integración monetaria y financiera europea ha estado caracterizado por una historia de conflictos entre los objetivos de corto plazo perseguidos por los distintos países miembros del acuerdo. Así, por ejemplo, durante el período 1987-1992, cuando se toma como moneda de referencia el marco alemán cuya emisión correspondía al Bundesbank, el objetivo regional de convergencia nominal condujo a la región a la implantación de un régimen cambiario de bandas, destinado a evitar reajustes del tipo de cambio y a establecer una fluctuación máxima de ± 2,5%.

Durante este mismo período, y en repetidas oportunidades, coincidieron contextos durante los cuales la política ejecutada por parte del Bundesbank, en relación a la fijación de las tasas de interés de referencia para la región, estaba basada en objetivos incuestionablemente asociados a los que las autoridades de ese banco central consideraban como favorables para la economía nacional, sin preocuparse por los efectos que dicha política podría tener sobre el resto de las economías de la región. En específico, en varias oportunidades durante ese período, el Bundesbank elevó sus tasas de interés como parte de sus políticas antiinflacionarias, aún cuando ciertamente se sabía que ello afectaba el desenvolvimiento de otras economías de la región, particularmente aquellas con altos niveles de endeudamiento como Italia y Bélgica, entre otras.

A principios de los años noventa, la situación monetaria y financiera anteriormente descrita, acelerada por la inversión en actividades especulativas desestabilizadoras, condujo finalmente a una crisis monetaria generalizada la cual afectó a diversas monedas de la región[10]. El aprendizaje posterior a tal experiencia condujo a una flexibilización del régimen cambiario de bandas, estableciéndose durante el período 1993-1998 una nueva amplitud en el rango del ± 15%.

El avance de los acuerdos representado a través de la firma tanto del Tratado de Maastricht (TM) de 1991 como del Pacto de Estabilidad y Crecimiento (PEC) de 1997, establecerían los siguientes criterios fundamentales de convergencia nominal (De Grauwe, 2003):

10 Así, para 1992, las premisas del modelo de Krugman (1988) habrían quedado disociadas de la realidad. Entre otras premisas, el modelo incorporaba: la credibilidad en el sistema de bandas, el supuesto que consideraba intervenciones gubernamentales únicamente de orden marginal, la exogeneidad y aleatoriedad de la velocidad de circulación del dinero la cual se asumía con tendencia y movimiento de tipo browniano, y volatilidad constante y en ningún momento influenciada por cambios en la tasa de interés, el supuesto de roce suavizado de las bandas o *smooth pasting* y, finalmente, el supuesto del "efecto luna de miel" o *honeymoon effect*.

1. La tasa de inflación de un país candidato a entrar en la Unión Europea (UE) debía ser no mayor a 1,5 veces la tasa de inflación promedio de los tres países candidatos con menor tasa de inflación.
2. La tasa de interés de largo plazo de un país candidato debía ser no mayor a 2 veces la tasa de interés promedio de largo plazo de los tres países candidatos con menor tasa de interés.
3. El país candidato debía pasar a formar parte del Sistema Monetario Europeo o "European Monetary System (EMS)" sin haber experimentado una devaluación en los dos años inmediatamente anteriores a la entrada en la unión.
4. Se debían procurar déficit fiscales inferiores al 3% del PIB, quedando cualquier desviación por encima de la norma del 3% como excepcional. Posteriormente, el Pacto de Estabilidad y Crecimiento (PEC), cuya preocupación fundamental habría estado asociada a la consecución de presupuestos balanceados, establecería multas de hasta 0,5% del PIB, para aquellos países que excediesen la norma del 3% a menos que ocurriesen circunstancias excepcionales como por ejemplo, desastres naturales o caídas del PIB por debajo de un 2% anual.
5. Se debían procurar niveles de deuda pública inferiores al 60% del PIB.

En relación al punto (1), el Tratado de Maastricht pretendía afectar las distintas preferencias o sesgos que en materia de inflación distanciaban las diversas posiciones planteadas por cada una de las autoridades monetarias de las economías de la UE. En particular, el Bundesbank buscaba impedir una reducción del nivel de bienestar de la economía alemana al evitar aceptar un sesgo inflacionario característico de las preferencias de otros países de la región. En este sentido, el país con menor tasa de inflación, es decir, Alemania, solicitaba diseñar un banco central europeo basado en las preferencias del Bundesbank. Ello garantizaría que sólo aquellos países con las mismas preferencias pasarían a formar parte de la unión (Morales y Padilla, 1994)[11].

[11] Era de esperar que el diseño del Banco Central Europeo (BCE) habría tenido que tomar en consideración las sensibilidades particulares de cada nación, así como también, el deseo de cada banco central nacional de retener algún grado de control sobre la política monetaria. Sin embargo, en la práctica, el altísimo grado de independencia del BCE parece no haber sido acompañado por un proceso de control de su desenvolvimiento acorde con tal grado de independencia. No obstante, probablemente uno de los mayores obstáculos que enfrenta la Unión Monetaria Europea es la falta de centralización y supervisión sobre el sistema financiero europeo, así como también la falta de centralización del rol de prestamista de última instancia el cual descansa aún sobre las autoridades fiscales nacionales.

En lo relativo a las preferencias del Banco Central Europeo en materia de inflación y ocupación, vale destacar que la literatura tradicional plantea la presencia de una contradicción

En referencia al punto (2), asociado a la convergencia nominal en materia de tasas de interés, se procuraba impedir que el país candidato a la entrada en la Unión Monetaria Europea, estuviese expuesto a ganancias o pérdidas financieras. Sin embargo, este criterio de convergencia demostró ser redundante ya que el mismo estaba automáticamente garantizado, debido a que las fuerzas de mercado que operaban a través del arbitraje permitían por sí mismas su cumplimiento (De Grauwe, 2003).

Con respecto al criterio número (3), relacionado con la convergencia de las tasas de cambio, el objetivo que se perseguía era evitar manipulaciones cambiarias previas al momento de entrada en la unión monetaria. Esto es, se buscaba impedir devaluaciones previas a la entrada que afectasen la posición competitiva de los países.

Finalmente, en lo relativo a los criterios de convergencia presupuestaria (4) y (5), el propósito de los mismos era colocar límites a la expansión de la deuda pública ya que se alegaba que: i) altos volúmenes de endeudamiento incrementarían las presiones nacionales para generar inflaciones sorpresivas, y ii) que aquellos países con altos niveles de endeudamiento enfrentarían un mayor riesgo de insolvencia o incumplimiento que, sumado al peligro del contagio en el caso de crisis financieras, generaría un riesgo moral asociado a un sentimiento de aval implícito o *bail-out*[12].

---

entre los objetivos de estabilización del producto y de estabilización de la inflación en el caso en que la fuente de perturbación provenga de un choque de oferta, contrario a lo que sucedería en presencia de un choque de demanda. No obstante, en relación a ambos casos, el Banco Central Europeo ha dejado clara su mayor preocupación por la estabilidad de precios, aún cuando la estabilidad del sistema financiero lo obligue a preocuparse también por la suavización de los movimientos de la tasa de interés.

12 A este punto es importante resaltar algunos conceptos y supuestos básicos acerca de la sostenibilidad fiscal haciendo uso de la siguiente fórmula: $(I - G) + i\,B = dB / dt + dm / dt$, donde $(I - G)$ se refiere a la diferencia entre ingresos fiscales y gastos primarios, es decir, al déficit primario, $e\,i\,B$, al producto de la tasa de interés promedio sobre títulos del Gobierno, y su acervo total de deuda, es decir, al servicio de la deuda pública; dB / dt a la variación o emisión de nueva deuda pública; y finalmente, dm / dt a la variación o emisión monetaria. De esta forma, $(I - G) + i\,B$ representa el déficit financiero, el cual es financiado con emisión de deuda y emisión monetaria $dB / dt + dm / dt$.
Posteriormente, si se define $b = B / Y$ como el acervo de deuda pública como porcentaje del PIB, entonces: $Db / dt = [dB / dt / Y] - [B / Y\,dY / dt / Y]$, o equivalentemente, $Db / dt = [dB / dt / Y] - [b\,C]$, donde $C = dY / dt / Y$ es la tasa nominal de crecimiento del PIB. Así, para mantener constante el acervo de deuda pública como porcentaje del PIB, es necesario que $Db / dt = 0$, implicando: $0 = [dB / dt / Y] - [b\,C]$, o equivalentemente: $dB / dt / Y = b\,C$, lo cual es igual a $dB / dt = B\,C$.
Finalmente, sustituyendo en la ecuación del déficit público, se obtiene que, para mantener constante el acervo de deuda pública como porcentaje del PIB, en ausencia de una desvalorización monetaria, o sea cuando $dm / dt = 0$, $(I - G) = (C - i)\,B$. Implicando que para mantener

De esta forma, tanto del Tratado de Maastricht (TM) como el Pacto de Estabilidad y Crecimiento (PEC) aceptan la visión de que la política fiscal debía estar sometida a reglas. Dos eran los argumentos fundamentales:

- El primero se refería al hecho de que una economía que se encuentra en una senda de endeudamiento insostenible genera externalidades negativas sobre el resto de las economías de la región. Así, la insostenibilidad financiera en un país, y por ende la presión al alza de las tasas de interés a causa del peso de su deuda, generarían una mayor carga financiera para otros países; y ello a su vez, forzaría a estos otros países a seguir políticas antiinflacionarias para contener su gasto fiscal y mejorar así su propia sostenibilidad perjudicada inicialmente por el aumento de las tasas de interés (De Grauwe, 2003).
- El segundo argumento a favor del sometimiento a reglas de política fiscal, se refiere al hecho de que la insostenibilidad financiera pondría presión política sobre el Banco Central Europeo para reducir el nivel de la tasa de interés de referencia, complicando así la tarea del banco en la definición de sus objetivos de política monetaria.

En relación a los argumentos anteriores asociados a los criterios de convergencia presupuestaria, vinculados tanto con el TM como con el PEC, numerosas han sido las críticas; entre ellas:

a. El primer argumento necesariamente supone la presencia de mercados de capitales imperfectos. Esto es, la creencia de que bajo condiciones de insostenibilidad fiscal en un país, existiría un sentimiento generalizado de aval implícito asociado a la necesidad de impedir propagaciones de crisis financieras, supone como condición para el aumento generalizado de las tasas de interés, una valoración inadecuada del riesgo por parte de agentes financieros inexpertos, al no estar en capacidad de discriminar correctamente entre los riesgos asociados a los títulos de deuda de los diversos países.

b. Por otra parte, el segundo argumento olvida que las reglas fiscales son regularmente difíciles de hacer cumplir. Las restricciones constitucionales sobre emisión de deuda y déficit fiscal son usualmente saltadas a través de diferentes métodos y técnicas tales como la manipulación contable (o *off-budgeting*).

c. Finalmente, se ha criticado que no existía una explicación clara acerca de por qué se establecieron criterios numéricos de un máximo del 60% del PIB de endeudamiento público y un máximo del 3% del PIB de déficit fiscal. No

---

el ratio deuda pública sobre PIB constante sin recurrir al señoreaje o a una devaluación, es necesario que la tasa nominal de crecimiento económico C exceda a la tasa de rendimiento nominal de los títulos públicos i. En caso contrario habría que inflar o devaluar. La crítica a esta ecuación sería el hecho de tomar la tasa nominal de crecimiento económico como exógena e independiente de la política fiscal.

obstante, probablemente se deba al hecho de que, por un lado, el porcentaje promedio de endeudamiento de la región al momento del convenio se encontraba cercano al 60%, y que por el otro, el porcentaje promedio de crecimiento nominal del PIB en la región se aproximaba al 5%, lo cual permitía bajo ese criterio, mantener un déficit fiscal del orden del 3% $-dB / dt / Y = 3\% = b * C = 60\% * 5\%-$. (Véase la nota número 6, De Grauwe, 2003)[13].

La discusión anterior ha llevado a muchos teóricos estudiosos de la integración europea a plantear la presencia de una contradicción entre dos objetivos mutuamente conflictivos. Por un lado, el primero se refiere al hecho de que en ausencia del instrumento cambiario y de una política monetaria autónoma, es necesario contar con una política fiscal flexible que permita absorber choques asimétricos.

Por otro lado, el segundo se refiere a la necesidad de colocar límites a la política fiscal de forma tal de garantizar su sostenibilidad generalizada en la región, y por ende, procurar la reducción de las externalidades negativas que, producto de la insostenibilidad de algunos países, obliga al resto de las economías de la región a seguir políticas antiinflacionarias con el propósito de mejorar su situación individual en materia de sostenibilidad. El PEC parece haberse preocupado más por el segundo objetivo, obligando así, en la práctica, a que los países, con el propósito de evitar sanciones, mantengan en promedio balances superavitarios para poder contar con suficiente flexibilidad durante períodos de recesiones[14].

La experiencia europea nos obliga a reconocer la importancia de la flexibilidad presupuestaria en el manejo de choques asimétricos no atendidos directamente por la banca central regional, la cual sólo es capaz de percibir la presencia de choques simétricos que afecten a la región en su conjunto o choques específicos que afecten a las economías más grandes.

---

13 Precisamente, el 17 de octubre de 2002, durante una entrevista concedida al diario vespertino francés *Le Monde*, Romano Prodi, actual Primer Ministro de la República Italiana, catalogó de "estúpida" la simple idea de que los países debían cumplir con una regla numérica del 3% independientemente de sus condiciones particulares en materia económica y de endeudamiento.

14 Vale destacar que la falta de flexibilidad presupuestaria para hacer frente a las recesiones genera una tensión potencial entre los gobiernos nacionales y las autoridades europeas. Por un lado, durante las recesiones los gobiernos podrían incrementar su presión política con el propósito de obtener una política monetaria más laxa, en cuyo caso, el PEC, el cual fue diseñado para proteger al BCE de la presión política podría más bien acentuarla durante las recesiones. Por otro lado, durante momentos difíciles de estancamiento, mientras las economías luchan para salir de la crisis, las instituciones europeas pasan a ser vistas como portadoras de amenazas, multas y penalidades. Así, el PEC parece haber ido muy lejos en el establecimiento de reglas de política fiscal, las cuales parecen generar riesgos superiores a aquellos asociados al incumplimiento financiero y avales implícitos.

Es importante, sin embargo, analizar con mayor claridad el tema de la sostenibilidad fiscal, ya que las fallas del PEC, hacen pensar que los criterios numéricos sin bases científicas pueden resultar contraproducentes. La preocupación acerca de la sostenibilidad fiscal debería considerar, como indicador fundamental, el déficit estructural y no aquel coyuntural resultante de la activación de estabilizadores automáticos destinados a la superación de las crisis[15]. De esta forma, la evaluación acerca de si un país mantiene o no un déficit excesivo debería ser basada sobre las condiciones económicas subyacentes y sobre los niveles de deuda de la economía en cuestión.

Igualmente, el requisito impuesto por el PEC con el propósito de hacer mantener en promedio presupuestos balanceados carece de sentido toda vez que ello conduciría a la desaparición total de la deuda en el largo plazo; algo que no parece tener justificación, más aún si se acepta la necesidad de repartir intertemporalmente (a través de la emisión de deuda los costos asociados) a la inversión pública en capital físico y humano, inversión por demás beneficiosa también para las futuras generaciones.

Adicional a la necesidad de compartir a nivel intergeneracional los costos asociados a la inversión pública como a la estabilización y absorción de choques y perturbaciones, coexiste igualmente, la necesidad de compartir tales costos a nivel intraregional. Probablemente, este es uno de los aprendizajes más claros del proceso de integración europeo. La centralización de los presupuestos nacionales a nivel europeo, por lo menos en lo relacionado a temas como la seguridad social, y los impuestos sobre la renta permitirían aprovechar aún más los beneficios de los estabilizadores fiscales automáticos (seguros y beneficios para desempleados, beneficios por paro forzoso, etc.).

De hecho, en presencia de choques asimétricos que, por generar efectos compensatorios sobre los niveles de actividad económica de los distintos países miembros, tienden a no ser percibidos por la banca central regional, la posibilidad de utilizar el presupuesto regional centralizado permitiría de forma automática la ejecución de una transferencia o redistribución intraregional de ingresos desde aquellas economías que experimenten crecimiento del producto, del empleo y los impuestos, hacia aquellas expuestas a los costos de la recesión, desempleo y crisis fiscal.

Lo anterior representa el caso de un sistema de seguro a nivel intra-regional, o lo que es lo mismo, un sistema fiscal federal basado en un presupuesto centralizado,

15 Como por ejemplo a consecuencia de la presencia de estabilizadores fiscales automáticos, tales como el aumento inmediato de los beneficios a desempleados e indigentes, y el aumento de gastos relacionados con el pago del paro forzoso y otros, durante recesiones.

tal como el observado en los Estados Unidos de Norteamérica. En ausencia de tal sistema, así como también en ausencia del instrumento cambiario, la absorción de perturbaciones asimétricas coyunturales se ve limitada a la utilización del mecanismo de seguro intergeneracional, es decir, se ve limitado a la expansión del endeudamiento, lo cual a su vez depende en gran medida de las evaluaciones de riesgo por parte de los agentes y, por ende, del propio acervo de deuda acumulado en el pasado.

En resumen, la experiencia de la Unión Europea debe ser considerada a profundidad al momento de analizar el curso futuro de los acuerdos regionales en Latinoamérica, más aún si estos han de involucrar arreglos en materia de convergencia nominal e integración monetaria y financiera. De esta forma, la renuncia a una política monetaria y cambiaria soberana, deberá ir acompañada de una flexibilización de la política fiscal tanto a nivel nacional como regional, de forma tal que la absorción de choques asimétricos de carácter local (no percibidos por la banca central regional) puedan ser alcanzados sin obligar a las autoridades nacionales a imponer el endeudamiento improductivo y la recesión.

Lo anterior, sin embargo, parece obstaculizarse en caso de no establecerse un sistema regional o federal que facilite las transferencias de ingresos desde aquellas economías en crecimiento hacia aquellas abatidas por una coyuntura económica indeseable[16]. Un sistema fiscal regional basado en transferencias automáticas intraregionales coadyuva a reducir los costos sociales del proceso de integración económica, y en particular del proceso de integración monetario y financiero.

A pesar de lo anterior, dado a que usualmente los sistemas fiscales regionales basados en un presupuesto regional centralizado pasan primero por un proceso largo de integración política, el rol de absorción de las perturbaciones asimétricas, por un largo tiempo, tendrá que apoyarse en una mayor flexibilización de la política fiscal nacional; algo que, como fue dicho anteriormente, depende de la propia sostenibilidad financiera del gasto fiscal o lo que es lo mismo de la disciplina fiscal

[16] Discriminar entre choques estructurales y choques temporales es fundamental al momento de decidir la ejecución de transferencias de ingresos entre regiones o países, al igual que al momento de tomar decisiones en materia de transferencias intergeneracionales vía el endeudamiento público. Es evidente que en presencia de choques estructurales usualmente hacen falta ajustes a nivel institucional, a nivel legal, contractual, a nivel de los mercados laborales, de la movilidad de la mano de obra, etc. En presencia de choques estructurales, los ajustes vía endeudamiento o a través de políticas de transferencias intraregionales afrontarían un destino desfavorable, no solamente debido a que estas medidas pasan a ser política y financieramente inviables sino que también debido a que el nivel de riesgo moral involucrado pasa a ser extremamente elevado.

de las autoridades nacionales, así como también de las valoraciones de riesgo realizadas por los agentes financieros[17].

Para concluir, precisamente en materia financiera, se destaca la importancia de los esfuerzos de unificación en el caso europeo a través de mecanismos como el Plan de Acción para los Servicios Financieros. Sin olvidar los costos potenciales asociados a la acentuación de problemas de contagio, es de esperar que la integración financiera, al facilitar las transferencias de recursos a nivel intra e interregional, coadyuve a alcanzar un mayor nivel de desarrollo (González, 2005). Justamente, al tomar en cuenta la importancia de los flujos de capital para el financiamiento de la inversión en favor del desarrollo, una lectura a partir de los flujos de capitales hacia la región latinoamericana resulta de interés para el análisis de esquemas de integración regional. En este sentido, la próxima sección estudia en particular los alcances de la integración financiera a nivel latinoamericano.

Integración financiera latinoamericana

La integración financiera es el proceso por medio del cual mercados financieros de un país participan más estrechamente de los mercados del resto de la región o del mundo; y su objetivo es el logro de un espacio financiero regional estable, cuya regulación permita minimizar las crisis y sus efectos de contagio. En este sentido, la integración financiera se verá facilitada en la medida en que se avance hacia a una mayor armonización en materia de reglas y normas con miras a garantizar mayor transparencia y supervisión de los sistemas financieros, todo lo cual tiende a lograrse a partir de la convergencia a estándares internacionales (BID, 2002).

Si bien se señala con frecuencia que la integración financiera regional debería ser un paso posterior al logro de políticas de coordinación macroeconómica, ésta es acicate y ayuda importante para avanzar en ese sentido, pues facilita el acceso a fuentes de liquidez en procesos de crisis, limita el endeudamiento fiscal

[17] Si la sostenibilidad financiera del gasto público depende de la propia disciplina fiscal, valdría la pena preguntarse, ¿cuál es el efecto del proceso de integración monetaria sobre la disciplina fiscal? Por un lado, la eliminación del riesgo cambiario nominal que disminuye el nivel de la tasa de interés asociada a los títulos de deuda doméstica, podría estimular un mayor uso del endeudamiento como medio de captación de recursos dentro de la unión monetaria. Sin embargo, por otro lado, la pérdida del señoreaje por parte de las autoridades fiscales nacionales, obliga a estos a enfrentar una restricción presupuestaria más exigente, lo cual podría servir de incentivo para la reducción del volumen de endeudamiento. No obstante, si bien es cierto que la integración monetaria no necesariamente genera una mayor disciplina fiscal, también es cierto que la misma no necesariamente genera una menor disciplina fiscal.

a corto plazo y favorece la eficaz movilización de los recursos financieros, pudiéndose invertir en programas y proyectos en pro del desarrollo regional, a la par que se limita la exposición regional a la especulación y la volatilidad de las expectativas globales. La ampliación del tamaño de los mercados financieros tiende a reducir el costo de la inversión, la exposición al riesgo crediticio y el riesgo moral, a partir de la mejora en la supervisión la cual redunda en una mayor estabilidad sistémica.

La integración en el plano financiero puede concretarse a partir de esfuerzos formales destinados a tal fin, pero también puede emerger sin acuerdos preexistentes, siendo el resultado del interés de actores internacionales en un mercado en particular. Aunque a partir de la década de los noventa se consolidan esquemas de armonización en este sentido (Levy, 2000), la integración informal ha sido el caso más común en la región latinoamericana, donde bancos, fondos de inversión y empresas de seguro internacionales, principalmente de países desarrollados, participan en la región, promoviéndose el desarrollo de lazos comerciales y de inversión entre las partes.

Esta integración financiera, a su vez ha sido estimulada por los procesos de liberalización de los años ochenta y noventa, los cuales han estado vinculados a políticas de apertura al comercio, a la inversión extranjera directa y al desarrollo de los mercados bursátiles regionales. Pero estos esquemas de apertura no han generado la totalidad de los efectos deseados en la región y las características de los fondos que a la misma se dirigen, no siempre favorecen efectos multiplicadores positivos. Más aún, en la actualidad se reevalúan los beneficios resultantes de los esfuerzos realizados para la atracción de capital, sus características, volúmenes y las estrategias utilizadas para su captación.

Integración financiera de facto: flujos de capital hacia la región latinoamericana

La región latinoamericana ha vivido distintas experiencias frente al capital: desde ser *locus* de inversión por excelencia, hasta ser excluida virtualmente de las corrientes de capital y convertirse en exportadora neta del mismo, con el consecuente impacto en el deterioro del bienestar de sus ciudadanos. Los flujos de capital vuelven a la región en los años noventa, producto de una combinación de elementos internos y externos: reformas económicas, transformaciones institucionales, desarrollos financieros regionales y nuevas realidades internacionales.

Cuadro 1
Entradas de capital a la región latinoamericana
(Millones de US$, %)

Concepto	1970-1979	1980-1989	1990-1997	1998-2004
Flujos agregados netos	146	219	507	494
Flujos netos de deuda l.p.	118	143	175	82
Inversión directa neta	26	62	220	394
Portafolio (acciones)		1	88	1
Donaciones (excluye coop. técnica)	2	13	24	18
Pago de interés	48	249	185	246
Remisión de utilidades	18	55	100	126
Transferencias netas	80	-85	223	122
Ek*/Inb**	4.3%	3.4%	5.1%	5.9%
Ek/X***		18.6%	28.6%	24.2%

(*) Entradas de capital; (**) Ingreso Nacional Bruto; (***) Exportaciones.
Fuente: Banco Mundial, Flujos Mundiales de Financiamiento para el Desarrollo, 2006.

Las entradas netas de capital a la región se evidencian a través de cinco conceptos: inversión directa, inversión en portafolio, préstamos bancarios, ayudas oficiales y transferencias. Cada uno de estos rubros ha tenido mayor o menor importancia en la historia del siglo pasado de la región y particularmente se han diferenciado en cada uno de los países de la misma, aún cuando en términos generales se destaca el peso creciente de los influjos en el desempeño económico.

Aunque la evaluación de la integración financiera de facto ha de incorporar la totalidad de los flujos de capital relacionados con la región, en este trabajo se destacarán los movimientos de capital por concepto de inversión extranjera directa y aquellos vinculados al desarrollo de los mercados de capitales de la región, excluyendo aquellos en los que la participación de los Estados es determinante, (deuda soberana, ayuda al desarrollo y préstamos gubernamentales).

Inversión extranjera directa

La profundización de las reformas estructurales de la década de los noventa condujo a la conversión de parte de la deuda por inversiones directas, lo que se concretó por medio de amplios programas de privatización los cuales atrajeron capitales extranjeros en sectores de la economía anteriormente administrados por el Estado: banca y finanzas, telefonía básica y celular, aviación y navegación, electricidad, minería e hidrocarburos, e infraestructura de servicios, puertos, aeropuertos y otros. Desde entonces, la región se ha mantenido como destino importante de los flujos de inversión directa, llegando en el período 1998-2004 a cifras anuales promedio cercanas a los US$ 70 mil millones.

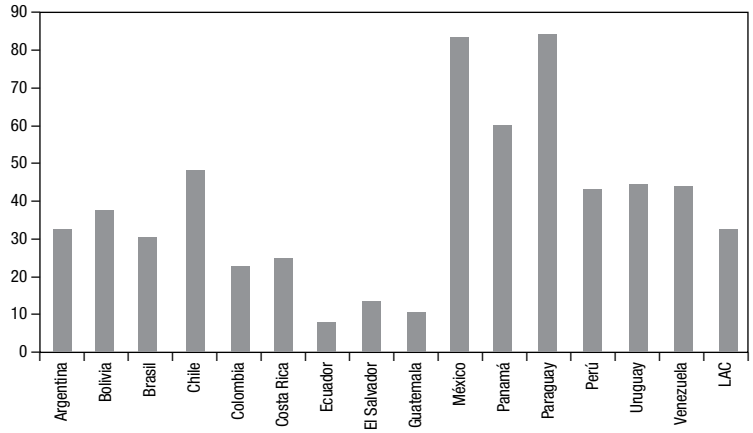
El tamaño de la economía resulta elemento definitorio en el destino del capital: tres cuartas partes de los flujos se concentran en Brasil, México, Argentina y el 20% siguiente en las economías medianas (Chile, Colombia, Perú y Venezuela). El 70% de los mismos se destina al sector terciario y de éste, el 30% se canaliza hacia la actividad financiera (Banco Mundial, 2006 y cálculos propios).

El principal proveedor de fondos a Latinoamérica es la región norteamericana (EE UU y Canadá), siguiéndole en importancia el continente europeo, donde destaca la actividad de inversión de transnacionales españolas tanto en el sector financiero, de telecomunicaciones, como en electricidad e infraestructura. En el sector financiero, el Banco Bilbao Vizcaya Argentaria (BBVA) y el Banco Santander Central Hispano (BSCH) se han convertido en los principales actores en los mercados financieros latinoamericanos. Mientras en 1994 la proporción de los activos totales en manos del sector bancario latinoamericano bajo control extranjero representaba alrededor del 10%, siete años después se había más que triplicado, destacándose los casos de México y Paraguay con más del 80% y Panamá con un 60% (Banco Mundial, 2006).

Si a lo anterior se añade el peso de la participación gubernamental en el sector bancario, que en la región no es desdeñable (salvo Bolivia, México y Perú), se observa el poco espacio de participación del sector privado nacional, por lo que la competencia es baja y las presiones para extraer mayores beneficios de estos capitales extranjeros no ha sido la mayor.

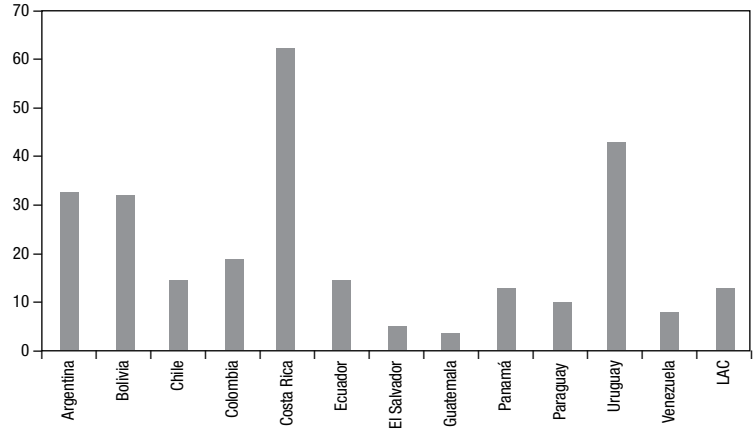
Teóricamente, el impacto de la participación de la banca extranjera es asociado a una mejor y más eficiente distribución de recursos, una reducción del costo del crédito por incremento de la competencia, aumento de instrumentos y servicios y mejora en la supervisión, y por ende en la estabilidad sistémica.

Gráfico 1
Activos bancarios de bancos extranjeros
(Porcentaje del total de los activos, año 2001)



Fuente: Banco Mundial, 2006.

Gráfico 2
Activos bancarios de bancos gubernamentales
(Porcentaje del total de los activos, año 2001)



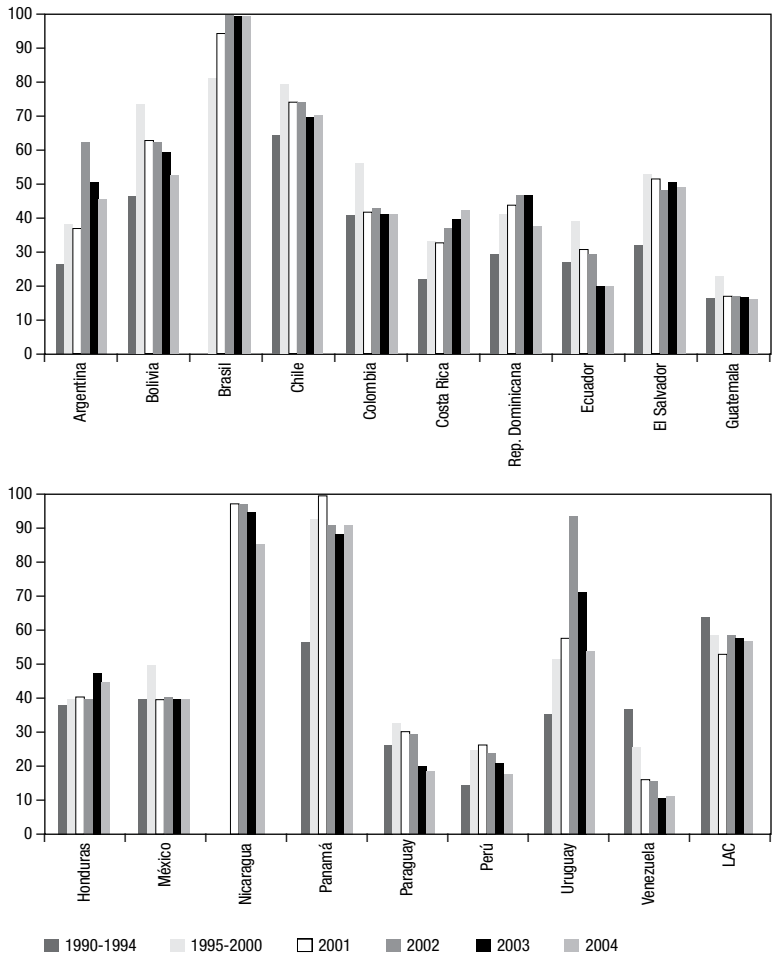
Fuente: Banco Mundial, 2006.

Se observa que la participación del crédito interno se mantiene alrededor del 60%, con importantes diferencias: Argentina, Bolivia, Brasil, Chile, Uruguay y Venezuela manifiestan un incremento en el período 1990-2000 a niveles del 100% y desde entonces hasta 2004 el crédito se contrae, aunque se mantiene en valores más elevados que al inicio del proceso de apertura

financiera que viviera la región en la década de los noventa. Por su parte, un importante número de países centroamericanos mantienen su nivel de crédito interno alrededor del 40%, estabilizando el promedio regional.

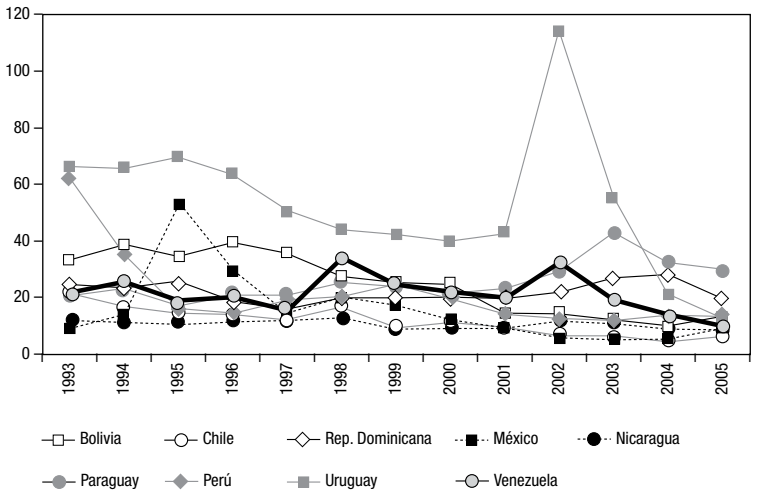
En relación a los diferenciales de las tasas se observa cierto descenso en el período 1994-2005, pasando de un rango de [15% - 40%] a [5% - 25%] en la mayoría de los casos. Claro está, si se compara con tasas de comienzos de los noventa la diferencia es mucho mayor.

Gráfico 3
Crédito doméstico otorgado por el sector bancario
(Porcentaje del PIB)



Fuente: Banco Mundial, 2006.

Gráfico 4
Evolución del diferencial de las tasas activas y pasivas

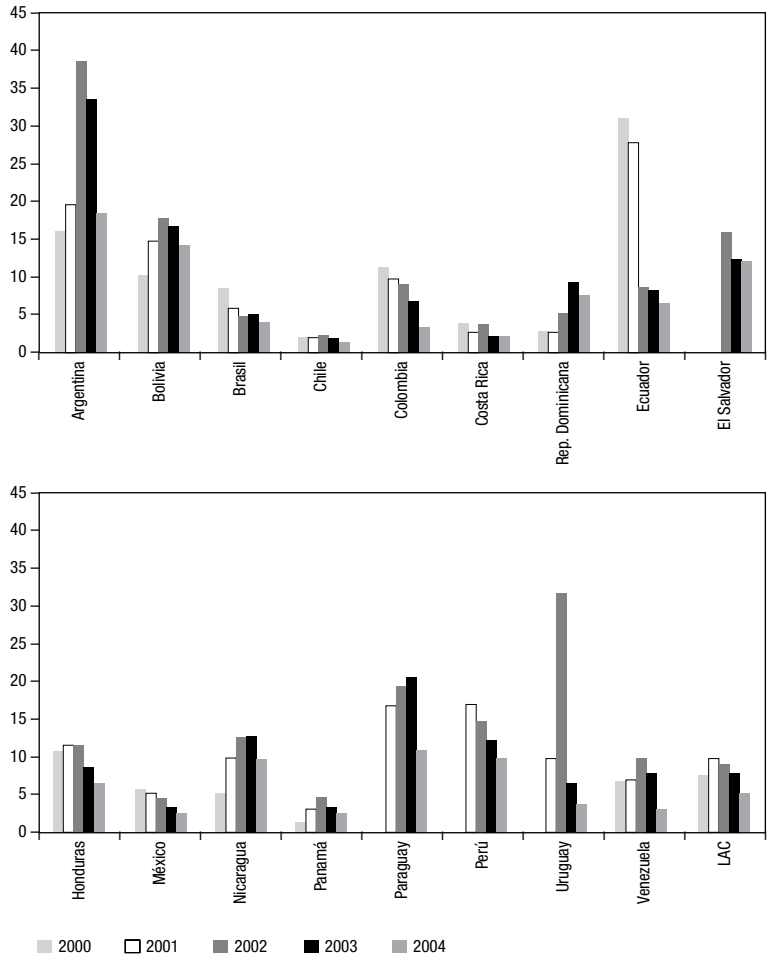


Fuente: FMI, IFS, 2006.

El alto diferencial preexistente entre las tasas activas y pasivas alimentó los rendimientos de las instituciones recién llegadas pero, ante crisis bancarias de alto calibre, las casas matrices no fungieron como prestamistas de última instancia de sus filiales en la región. Así, la cartera a pérdida en promedio ha bajado en el período 2000-2004 de un 9% a un 5%, con las notables excepciones de Argentina (2002-2003), Ecuador (2000-2001) y Uruguay (2002).

En síntesis, los influjos de capital por inversión extranjera directa en el sector bancario han favorecido la presencia en la región de corporaciones transnacionales del sector y, por ende, han facilitado una mayor penetración financiera con el consecuente trasvase de nuevos instrumentos y formas de negocios. Sin embargo, la poca competencia a la que se enfrentan estas corporaciones financieras les permite actuar de forma cuasi oligopolística en el mercado, con menores beneficios de los esperados para la región. Por otro lado, el esquema de profundización financiero no ha logrado que las instituciones propias de la región establezcan redes o vínculos para posicionarse en países distintos a aquellos de origen.

Gráfico 5
Porcentaje de la cartera de créditos con problemas



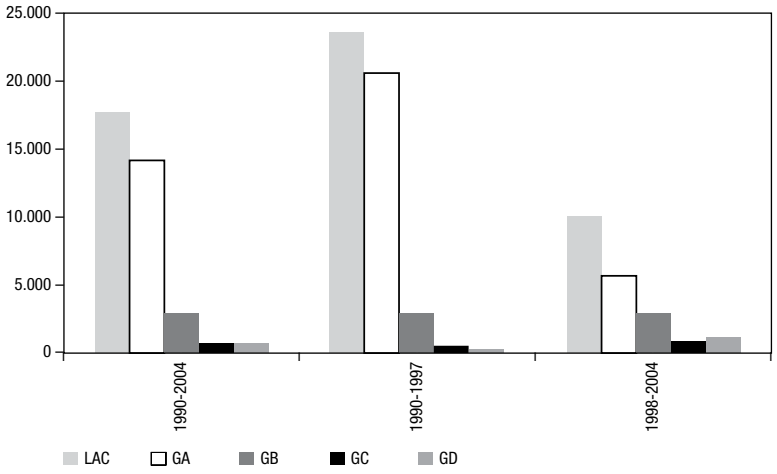
Fuente: Banco Mundial, 2006.

Mercado de capitales

La inversión en portafolio está vinculada directamente al sector financiero de las economías y su puerta de entrada es el mercado bursátil. Así, muchas empresas deciden efectuar levantamiento de capital a través de *equity underwritings* o emisiones de acciones, las cuales no se restringen al mercado local, sino que amplían sus actividades financieras a mercados extranjeros.

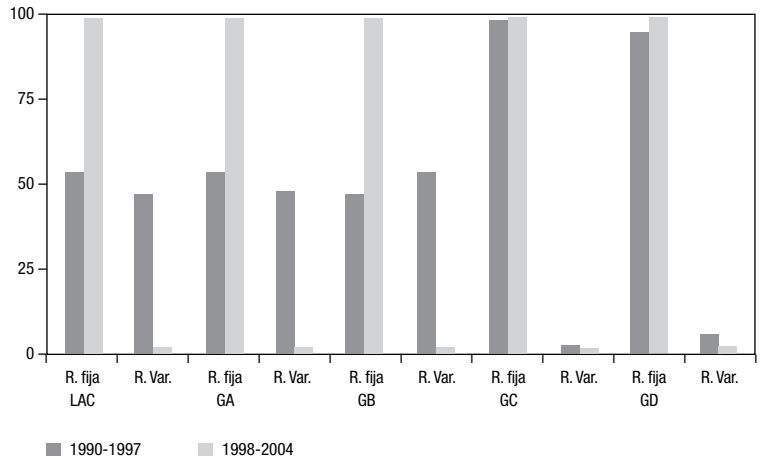
En dichas emisiones destacan entre otros instrumentos los ADR (American Depositary Receipt), los GDR (Global Depositary Receipt) y los Warrants. El mayor peso de estas emisiones la tienen los ADR, los cuales son negociados por medio de la llamada papeleta rosada en el mercado de los Estados Unidos de Norteamérica, y a partir de los cuales las empresas han logrado movilizar una porción sustancial del capital requerido para sus inversiones.

Gráfico 6
Inversión en portafolio: Destino intraregional
(MM US$)



LAC: Latinoamérica y el Caribe
GA: Argentina, Brasil y México
GB: Chile, Colombia, Perú y Venezuela
GC: Costa Rica, Ecuador, Guatemala, Panamá y Uruguay
GD: Bahamas, Belice, Bolivia, Cuba, República Dominicana, Guyana, Haití, Honduras, Jamaica, Nicaragua, Paraguay, Surinam, Trinidad y Tobago
Fuente: Banco Mundial, 2006.

Gráfico 7
Inversión en portafolio: destino intraregional
(Porcentaje)



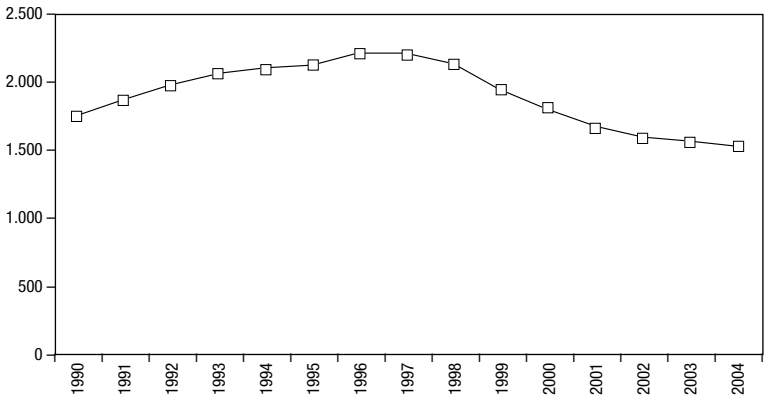
Fuente: Banco Mundial, 2006.

Por lo general los mercados bursátiles que logran captar la atención de los inversionistas internacionales son los de las economías de mayor tamaño en la región, los cuales a su vez presentan cierta importancia en su actividad y desempeño. Sin embargo, a partir de finales del siglo pasado, las economías más pequeñas han logrado captar alrededor de un 20% de estos flujos.

La inversión en portafolio se concreta tanto en instrumento de renta fija como aquellos de renta variable; aunque con una marcada preferencia hacia los menos riesgosos (renta fija) tras las crisis financieras de finales de siglo en las economía emergentes, las cuales generaron importantes cambios en las expectativas de los inversionistas y su evaluación de riesgo.

En lo referente al mercado bursátil, se observa un número creciente de empresas nacionales regionales listadas en sus respectivas bolsas hasta finales de los noventa, período a partir del cual se revierte la tendencia.

Gráfico 8
Empresas nacionales listadas en bolsa 1990-2004



LAC: Latinoamérica y el Caribe.
Fuente: Banco Mundial, 2006.

Por otro lado, cuando se revisa la proporción de empresas extranjeras listadas en las bolsas latinoamericanas, se observa un virtual aislamiento de la región en este sentido, más aún, las empresas de la región no cotizan sino en sus países de origen, observándose una mayor integración financiera con países de fuera de la región.

En este ámbito el proceso por recorrer es aún largo, pero conveniente. El fortalecimiento de estos mercados y su integración podría ayudar a disminuir la dependencia regional del capital extranjero, además de disminuir los costos de la inversión y evitar la fuga de capital. Particular impacto positivo han evidenciado tener los fondos de pensiones, tanto en el desarrollo del mercado de valores como en la disminución de la volatilidad de los flujos de capital.

Aún falta por avanzar en el desarrollo de un marco regulatorio homogéneo regional que permita ofrecer garantía de eficiencia, transparencia, flexibilidad y esquemas de control de riesgo sistémico. Resulta conveniente el desarrollo de la integración de estos mercados, el cual ha de tener presente el comportamiento y avance de los mercados globales y su interconexión, pues particularmente en esta área el término "mercado nacional" pierde significado y lo ubica en un hiperespacio que ha logrado trascender la capacidad física del ser humano y que confecciona el mapa de la red de comunicaciones globales.

Reflexiones finales

Generales

a. Un análisis de costo-beneficio acerca de la decisión de integración monetaria y financiera, aun cuando es relevante y adecuado para determinar el precio que algunos países tendrán que pagar, es regularmente insuficiente.

b. Desde el punto de vista individual del país miembro, los beneficios asociados al proceso de convergencia nominal e integración monetaria abarcan: la reducción de los costos transaccionales asociados a la eliminación del riesgo cambiario nominal, el aumento de transparencia en la fijación de precios y otros. Por su parte, el costo fundamental asociado al proceso de convergencia nominal e integración monetaria regional es la renuncia al uso del instrumento cambiario.

c. A nivel regional, los beneficios involucran, adicionalmente, un mayor nivel de señoreaje y expansión financiera, y a consecuencia de la reducción de los costos transaccionales, un efecto estimulador capaz de provocar mayores avances en el propio proceso de integración en los sectores monetario, financiero, político e institucional, etc.

d. Las estrategias planteadas con el propósito de lidiar con choques asimétricos, costosos tanto para la economía nacional como para la región, divergen notablemente entre sí. Mientras la ortodoxia propone una mayor flexibilización del mercado laboral, el pensamiento heterodoxo, postkeynesiano, reclama un mayor liderazgo del Estado en la promoción de políticas de ingresos nacionales (o *income policy*) que contengan la aceleración inflacionaria en el corto plazo (Colander, 1979; Appelbaum, 1982).

Región latinoamericana

e. Se observa cada vez más una mayor integración financiera a nivel global. No obstante, simultáneamente, se percibe una escasa vinculación regional latinoamericana.

f. Se evidencia la necesidad de revisar esquemas de integración financiera que permitan aminorar los efectos de movimientos abruptos de capital. En este sentido, existen aún instituciones regionales en estado incipiente que pudieran favorecer más aportando mecanismos adicionales de estabilización.

g. La integración conjuga aspectos económicos, políticos, militares, ambientales y culturales con actores nacionales, internacionales, públicos, privados, gubernamentales y de la sociedad civil. En virtud de lo anterior es manifiesta la necesidad de promover la participación de los distintos sectores nacionales.

h. Los acuerdos de integración no son fáciles: sus caminos son pedregosos y sólo la claridad de las naciones y de los beneficios finales frente a costos de corto plazo puede asegurar su concreción.

Referencias bibliográficas

Appelbaum, E. (1982). "The incomplete incomes policy vision", *Journal of Post Keynesian Economics*, vol. 4, issue 4, pp. 546-557.

Banco Interamericano de Desarrollo-Bid (2002). *Más allá de las fronteras. El nuevo regionalismo en América Latina*, Washington, DC.

Colander, D. (1979). "Incomes policies: MIP, WIPP, and TIP", *Journal of Post Keynesian Economics*, vol. 1, issue 3, pp. 91-100.

De Grauwe, P. (1997). *The Economics of Monetary Integration*, 3ª ed., Oxford University Press, Oxford.

_____ (2003). *The Economics of Monetary Union*, Oxford University Press, Oxford.

Engel, C. y J. Rogers (1995). "How wide is the border?", *International Finance Discussion Paper*, n° 498, Washington, DC, Board of Governors of the Federal Reserve System.

Gonzalez, J.M. (2005). "Integración financiera y crecimiento económico. Algunas lecciones desde la experiencia europea", discurso como miembro del Consejo de Gobierno y del Comité Ejecutivo del Banco Central Europeo en el Foro *Chile-Unión Europea Fundación Euroamérica*.

Grieco, J.M. (1997). "Systemic Sources of Variation in Regional Institutionalization in Western Europe, East Asia and the Americas", en Mansfield, Edward & Milner, Helen, eds., *The Political Economy of Regionalism*. Columbia University Press, Nueva York, pp. 164-187.

Haas, E. (1958). *The Uniting of Europe*, Stanford University Press, Stanford.

_____ (1964). *Beyond the Nation-State*, Stanford University Press, Stanford.

International Monetary Fund-Imf (2006). *International Financial Statistics*, Washington, DC.

Kenen, R. (1969). "The Theory of Optimum Currency Areas: An Eclectic View", R. Mundell y A. Swoboda, eds., Monetary Problems of the International Economy, Chicago, University of Chicago Press.

Krugman, P. (1984). "Import Protection as Export Promotion: International Competition in the Presence of Oligopoly and Economies of Scale", en H. Kierkowski, ed., *Monopolistic competition and International Trade*, Oxford, pp. 180-93.

_____ (1988). *Target Zones and Exchange Rate Dynamic*s, NBER, w2481.

_____ (1992). "Integration, Specialization and Regional Growth", Notes on 1992 EMU Stabilization, Memo, MIT.

Levy, S. (2000). "Los sistemas bancarios de los países de la Comunidad Andina de Naciones. Tendencias y perspectivas", *Nueva Economía,* vol. VIII-IX, abril, pp. 317-374, Caracas, Academia Nacional de Ciencias Económicas.

Lipsey, R. (1960). "The Theory of Customs Union: A General Survey", *Economic Journal,* vol. 70, pp. 496-513.

Mansfield, E. & H. Milner, eds. (1997). *The Political Economy of Regionalism*, Nueva York, Columbia University Press.

MATTLLI, W. (1999). *The logic of Regional Integration: Europe and Beyond*, UK, Cambridge, Cambridge University Press.

MCKINNON, R. (1963). "Optimum Currency Areas", *The American Economic Review*, 53, pp. 717-25.

MEADE, J. (1955). *The Theory of Customs Unions,* North Holland. Amsterdam.

MILTON, F. (1953). *Essays of Positive Economics*, Chicago, Chicago University Press.

MITRANY, D. (1966). *A Working Peace*, Chicago*,* Quadrangle Books.

MORALES, A. y A.J. PADILLA (1994). *Designing Institutions for International Monetary Cooperation*, Madrid, Cemfi.

MUNDELL, R.A. (1961). "A Theory of Optimum Currency Areas", *The American Economic Review,* vol. 51, septiembre, pp. 657-665.

SISTEMA ECONÓMICO LATINOAMERICANO-SELA(2006). *Tendencias recientes de los flujos financieros hacia y desde América Latina y el Caribe. El comportamiento de la deuda externa.*

VINER, J. (1950). *The Custom Union Issue*, Carnegie Endowment for International Peace, Cambridge.

WORLD BANK (2006). *World Development Indicators*, Washington, DC.

Revista Venezolana de Análisis de Coyuntura, 2004, Vol. X, No. 1 (ene-jun), pp. 201-250
recibido: 12-10-03 / arbitrado: 11-12-03

PARTIAL DOLLARIZATION: A CURRENCY-MATCHING RULE AND ITS IMPLICATIONS FOR MONETARY POLICY AND WELFARE•

Angel García Banchs*
UNIVERSITY OF WARWICK

Abstract:

This paper contributes to previous studies of partially-dollarized economy inflation targeting by incorporating the effect of a currency-matching rule. Specifically, such a rule implies imposing a restriction to credit dollarization in order to guarantee that any form of foreign-currency-denominated debt (or bank credit) is solely allocated to the export business sector of the economy. The results are straightforward. When the economy is not financially exposed to real exchange rate risk: (i) the volatility of the major macroeconomic variables is reduced, reflecting gains in terms of welfare, and (ii) the optimal policy reaction function becomes less responsive to changes in the risk premium and the foreign interest rate, and more reactive to movements in the output gap and expected inflation. The consequences from (i) and (ii) suggest that the advice that calls for liability de-dollarization in small open economies, should solely apply to the non-export business sector.

Key words: Financial (partial) dollarization; currency-matching rule; fear of floating; "original sin".

Economic turbulence and incoherence are associated with both deep depressions and severe inflations: they lead to serious systemic deviations of output from potential output. Whereas the orthodox theory finds that decentralized market processes lead to optimums, the financial instability hypothesis holds that the outcomes of capitalist market processes are often seriously flawed. However, the full effect of these flaws, such as deep and long depressions, can be contained by apt economic policies". H. Minsky (1994, p.4)

1. INTRODUCTION

Most emerging market economies which still issue a local currency exhibit high levels of partial dollarization[1]. This phenomenon, which in most cases was

• Thanks to Lei Zhang, Eduardo Morón, Diego Winkelried, Lucio Sarno, Marcus Miller, Martin Ellison, Rodrigo Dupleich, Christopher Kubelec, Kiran Kowshik.

* email: a.g.garcia@warwick.ac.uk

[1] Partial or Financial Dollarization refers to a dollarization process related to asset substitution and not currency substitution. Therefore, as Broda and Levy (2001) indicate, it is associated to the savings component of broad money.

originated during the hyperinflationary experiences of past decades, still persists today. In this sense, the most relevant literature has associated such a persistence (the so-called hysteresis[2]) to: (i) the existence of an "original sin"[3], and (ii) the permanence of high volatility in both inflation and local interest rates.

Agents belonging to open emerging market economies usually dollarize a proportion of their financial assets through either continuous capital outflows (which will be referred to hereafter as *off-shore dollarization*) or also (when legally permitted) through domestic deposit and credit dollarization (which will be referred to hereafter as *partial domestic dollarization*). In any case, the dollarization of a proportion of the domestic economy's assets either internally or offshore is a reality which reflects the inability of most local currencies to act as a store of value.

In the case of domestic dollarization, and specifically, when credit dollarization or other form of foreign-currency-denominated debt is available for domestic corporate firms, a delicate issue arises concerning the implementation of monetary policy. As highlighted by Krugman (1999 and 2000) and Aghion, Bachetta and Banerjee (2000), when domestic firms hold a large proportion of their liabilities in foreign currency, the practice of monetary policy becomes very problematic.

The reason is that while a reduction in local interest rates might generate an expansionary effect through the so-called "credit channel", the resulting real exchange rate depreciation from such an interest rate cut, might have a perverse (contractive) consequence attributed to a firms' "balance sheet effect".

In this sense, the monetary authority in a partially-dollarized economy faces a complexity when taking policy decisions in response to shocks[4]. That is, depending on the size of the shock, the need to cut down interest rates in order to stabilize output is mitigated by the adverse effect that such an interest rate cut might

---

[2] See Honohan and Shi (2002) for an explanation to the existence of hysteresis or a "ratchet effect".

[3] In the terms of Eichengreen and Hausmann (1999), most currencies from emerging-market economies have an "original sin". This implies that they cannot be used either to borrow abroad or to borrow long-term even in the local market.

[4] See, for instance, Aghion, Bachetta and Banerjee (2000) who discuss the optimal monetary response to a productivity shock. See also, Calvo and Reinhart (2000) who discuss the different responses to foreign demand shocks under "fear of floating".

have upon the real exchange rate and therefore upon firms' balance sheets. Calvo and Reinhart (2000) have labelled this phenomenon the "Fear of Floating".

The partial dollarization condition is therefore crucial to the analysis. This is due to the fact that under the absence of partial dollarization or when dollarization is full, there cannot be a balance sheet effect[5]. This is because when both the asset side and the liability side of a firm's balance sheet are denominated in the same currency, there is no exposure to currency mismatches, and therefore to exchange rate risk.

The above mentioned fact is the reason for the great debate among those who propose full dollarization and those who propose complete de-dollarization. On the one hand, those who propose full dollarization tend to stress the benefits of dollarization in terms of: lower inflation, greater credibility, lower interest rates, lower transaction costs in trade and investment, and the full elimination of exchange rate risk. On the other hand, those who oppose full dollarization, and instead propose complete de-dollarization underline: the loss of an independent monetary policy under full dollarization, the loss of seigniorage and inflation tax, the more costly adjustment to asymmetric shocks, and the lack of a lender of last resort[6].

Recently, however, an intermediate (or middle) position in the debate has arisen with the intention to preserve most of the benefits from both proposals. Specifically, such an intermediate position recognizes the need to retain an independent monetary policy[7], and as well, the need to develop a financial market in local currency. However, the same position also acknowledges the importance of retaining the benefits of partial dollarization in terms of greater financial deepening and access to international credit. In the end, it is clear that any inconvenience related to partial dollarization might arise only from the liability side (due to

---

[5] However, Chang and Velasco (2000) and Roubini (2001) warn that under full dollarization it is still possible to observe balance sheet effects. I will return to this specific point later on.

[6] This will be discussed further.

[7] An independent monetary policy (e.g. inflation targeting) is feasible given the fact that partial dollarization does not imply the presence of currency substitution for real markets transactions such as the purchase of commodities, payments of wages, etc., and therefore, the monetary authority is still able to conduct an efficient monetary policy in order to stabilize the inflation rate and the output gap.

currency-mismatches), while the benefits might come from both the liability side and the asset side[8].

This paper examines and proposes the introduction of a "currency-matching rule"[9]. In practice, such a rule implies imposing a restriction to credit dollarization in order to guarantee that any form of foreign-currency-denominated debt (mainly bank loans and corporate bonds) is solely allocated to the export business sector of the economy. This should eliminate the firms' balance sheet effect and therefore reduce the *fear of floating*. This is evident from the fact that the balance sheet of export business firms does not usually present currency mismatches, since both, their assets and liabilities are mainly denominated in the same (foreign) currency. When currency mismatches are completely eliminated from the economy[10], the exchange rate risk disappears and real exchange rate depreciations become unambiguously expansionary. Therefore, the practice of monetary policy can be facilitated, while the benefits of partial dollarization are retained.

This paper studies the implications of the introduction of the proposed *currency-matching* rule for monetary policy and welfare. Specifically, the paper compares the resulting optimal monetary policy response and the volatility of the major macroeconomic variables under the presence of the *currency-matching* rule, to the case in which the rule is absent.

The model in this paper is a small open-economy macroeconomic model. It was previously merged by Morón and Winkelried (2002), who combined an endogenous risk premium from Cespedes and others (2000) with Svensson's (2000) original model.

---

[8]The benefits from the asset side are mainly related to the fact that domestic deposit dollarization provides a protection against the devaluation risk of the local currency, and therefore an alternative to capital out-flights (off-shore dollarization), which in turn, allows for the deepening of domestic financial markets and the extension of bank loans maturities. The benefits from the liability side are that partial dollarization increases the economy's access to international credit markets, mainly through the global banking system and their ability to create virtual electronic money.

[9] See Goldstein (2002) for an alternative proposal based on hedging instruments and other mechanisms.

[10] This statement assumes that no major currency-mismatch is present either at the public sector level or at the household level.

As in Svensson (2000), the conventional transmission channels for monetary policy are the *aggregate-demand channel* and the *expectations channel*. In the first case, given nominal rigidities, the central bank can affect short-term real interest rates. This, in turn affects the aggregate demand (with a lag), and finally inflation (with an additional lag). Through the *expectations channel*, monetary policy affects expectations about future inflation, which through the practice of price and wage setting finally affects actual inflation (with a lag).

The role of the real exchange rate in the model is crucial. Given the fact that most small-open economies present a high share of imported final goods, variations in the exchange rate have a great impact upon CPI inflation through the so-called *direct exchange rate channel*.

Additionally, as the real exchange rate affects the relative price between domestic goods and foreign goods, and it, therefore affects both the domestic and foreign demand for domestically produced goods, it also has an impact upon the *aggregate-demand channel* in the transmission of monetary policy. Finally, as in the case of final imported goods, exchange rate movements which have an impact upon the domestic price of imported inputs, affect the cost of domestically produced goods.

An additional importance of the exchange rate is that, as an asset price, it responds to a forward-looking behaviour, which makes expectations about this variable a fundamental mechanism for the economy. Moreover, the exchange rate reacts immediately in response to certain external shocks such as to foreign inflation and international interest rates.

The incomplete pass-through from the exchange rate to domestic prices is fundamental[11]. This occurs because unanticipated real exchange rate depreciations affect the endogenous risk premium through two different channels. Firstly, a real exchange rate depreciation increases the competitiveness of domestically produced products. This in turn, reduces the risk premium. On the contrary however; an unanticipated real exchange rate depreciation deteriorates the balance sheet of non-export business firms. This instead, increases investors' risk premium.

---

[11] If the pass-through from the exchange rate to domestic prices is complete, there would not be a balance sheet effect. This is due to the fact that any exchange rate depreciation would be immediately transferred to domestic prices offsetting the effect of any increase in the domestic-currency value of firms' liabilities.

Therefore, these two antagonistic channels mean that the result from a real exchange rate depreciation is ambiguous for the economy. Only in the case when the balance sheet effect is not present, the effect of a real exchange rate depreciation becomes diaphanously expansionary. It is in this sense, that this paper examines the implications of a *currency-matching* rule for monetary policy and welfare.

The paper is summarized as follows. Section 1.1 briefly discusses the literature review on closed-economy inflation targeting. Section 1.2 covers the appealing debate on full and partial dollarization, currency regimes, and exchange rate risk. Section 1.3 deals with the extension of inflation targeting schemes to the partially-dollarized economy. Section 2.1 introduces and discusses the theoretical model. Section 2.2 presents the endogenously-determined risk premium. Section 2.3 introduces the loss function. Section 3.1 presents the parameters of the model. Section 3.2 presents the results, and Section 4 concludes and considers areas for further research.

1.1 On Closed-Economy Inflation Targeting

After a long period of predominance of monetarism and exclusive attention to the study of the implications of real factors for the business cycle, a new torrent of literature and empirical work has successfully initiated research on the effect of monetary determinants upon the real economy. Moreover, the recent literature which has been mainly originated in the late 1980's, presents evidence in favour of the short-run non-neutrality condition of money.

A critical issue which has determined the deviation from the orthodox business cycle theory is the explicit introduction of nominal rigidities in the formation of prices (see, for instance, Calvo (1983) for a simplified staggered price-setting behaviour). Therefore, the study of the realistic conditions under which prices and wages are set, becomes fundamental. Under sticky prices, monetary policy can affect the course of the real economy in the short-run. However, in the long-run when prices are completely flexible (adjustable) the effect of monetary policy is observed in the nominal variables, such as wages and prices.

It is this debate regarding price and wage-setting behaviour, and the progress gained in the study of dynamic general equilibrium models which lead to a surge in the attention to topics on monetary policy.

Among the major recent working papers on closed-economy monetary policy, John Taylor's proposal of a simple interest rate rule in Taylor (1993), and the support from Bernanke and Mishkin (1997) for inflation targeting represent well-

known examples. Additionally, the paper from Clarida, Galí, and Gertler (1999) constitutes a remarkable summary of the relevant literature on positive and normative aspects related to the practice and art of monetary policy.

Specifically, Clarida, Galí, and Gertler (1999) present a closed-economy macroeconomic model, in which a short-term interest rate becomes the instrument of monetary policy[12]. The policy reaction function of the central bank is derived from the minimization of a quadratic (welfare) loss function. The monetary policy problem in such a model is to describe the way the instrument adjusts to the conditions of the economy. In this sense, the presence of nominal rigidities becomes fundamental given the influence that monetary policy has upon the short-term real interest rate. Therefore, as in Fischer (1977) and Taylor (1980), Clarida, Galí, and Gertler (1999) also present a Phillips curve which is derived from staggered nominal price setting.

Additionally, in their model (and precisely in the aggregate demand equation), current output gap depends not only on the real interest rate but also on expected future output. Given consumers' preferences for smoothing consumption, an increase in expected future consumption (associated to higher expected permanent income) causes an increase in current consumption. This in turn, precipitates an increase in current demanded output. Furthermore, in the aggregate demand, the negative impact of movements in the short-term real interest rate, captures the effect of the intertemporal substitution of consumption. Equivalently, the disturbance in the same equation reflects expected changes in the government's expenditure plans.

In the case of the supply (Phillips) curve, inflation depends completely on current and expected future conditions. Therefore, no inflationary inertia is present. Changes in marginal costs are fundamentally related to changes in excess demand. However, a "cost-push" shock is added to capture any other variation in marginal costs not associated with excess demand.

A relevant complexity is therefore introduced when private sector's behaviour, depends not only on the current evolution, but as well on the expected future path of monetary policy. Particularly, in their model, the output gap depends on the current and future course of the interest rate, and therefore, inflation depends on the current and expected future path of the output gap. As initially stated

---

[12] As Clarida, Galí, and Gertler (1999) indicate, the selection of a short-term interest rate, as the instrument of monetary policy, responds to the fact that the experience of using broad money aggregates, suggests that those indirect indicators are too instable.

by Kydland and Prescott (1977); under the above mentioned conditions, credibility of future policy objectives represents a fundamental aspect in the analysis.

In this situation, agent's beliefs about the future level of the interest rate, becomes relevant since both households and firms show a forward looking behaviour. For example, when a central bank is credible, a commitment to a low-inflation policy in the future, may allow the central bank to reduce current inflation with a lower cost in terms of output contraction than might otherwise be necessary in the absence of commitment. This occurs because such a commitment allows the central bank to credibly influence private sector's beliefs about the future course of monetary policy and therefore of the state of the economy.

However, under discretion, which represents the case when the central bank is not trusted and therefore, cannot credibly commit itself to a fix monetary policy rule, the implications are fundamentally different. Specifically, under the absence of commitment and therefore of a fix monetary policy rule, the optimal policy involves inflation targeting. This occurs since under the absence of commitment, the resulting adjustment to the optimal inflation rate is gradual. Such a gradual adjustment is due to the worse short-run output/inflation trade-off observed under the case of discretion. The implications for the optimal monetary policy rule, is that the central bank should modify the nominal rate more than one-for-one, in relation to changes in expected future inflation. That is, when expected inflation increases, the central bank should increase nominal rates sufficiently to generate an increase in the real interest rate.

An additional implication of the case under discretion is that the central bank is able to choose the interest rate by reoptimizing every period. This occurs since under the absence of commitment, central bank's previous measures and announcements do not constrain current or future policy. In contrast, under a commitment to a specific monetary policy rule, the central bank chooses and (abides by) an unvarying strategy describing the future path for interest rates. Even though interest rates might respond in reaction to changes in the state of the economy, both the sign and intensity of the reaction do not vary over time.

Another major difference between the case of commitment and the case of discretion is that, in the former case, the central bank's binding promise is what makes the policy credible in equilibrium. In contrast, in the case of discretion, given the fact that the central bank is free to reoptimize every period, agents form their expectations by taking into consideration the way the central bank modifies its policy. An interesting issue which arises from this case is that the resulting long-run rational expectations equilibrium guarantees that the central bank has no incentive to change its strategy in an unexpected way, even though it has the

option to do so. The literature has labelled this particular characteristic of the equilibrium under discretion as "Dynamic (or Time) Consistent Equilibrium".

The consequence of the rational expectations equilibrium under discretion is that the central bank takes private sector's expectations as given, which is the equivalent of saying that agents are able to anticipate central bank's movements and therefore cannot be (continuously) fooled.

The findings from Clarida, Galí, and Gertler (1999) also show that as long as a "cost push" inflation disturbance exists, there is a short-run trade-off between inflation and output volatility[13]. As mentioned before, they also illustrate that under discretion, the resulting optimal policy (inflation targeting) requires a gradual convergence of inflation to its target. This involves a sufficiently active response to changes in expected inflation, in order to affect real interest rates to push inflation back to its path. However, when a "cost push" inflation disturbance is not present or when the monetary authority is extremely "conservative" and therefore has no concern for output volatility, then the optimal policy is "extreme" inflation targeting implying not a gradual but immediate convergence of inflation to its target.

Another major result is that while the monetary policy should offset demand shocks, it should only accommodate productivity shocks by maintaining interest rates constant. The rationale is simple, by offsetting demand shocks, output and inflation return to their correct path. However, in the case of a positive productivity shock, an increase in productivity generates an increment in permanent income, which in turn, affects consumption in a way that both, potential and demanded output increase, while leaving the output gap and inflation rate intact.

Regarding the issue of credibility and the benefits from commitment, the initial work of Kydland and Prescott (1977), and the subsequent works from Barro and Gordon (1983), and Rogoff (1985) represent the most prominent research. Regarding the discussion on credibility, two major issues are emphasized. Firstly, when a central bank has a concern for output volatility, and specifically, when it has the desire to increase output above its natural level, then it is said that a persistent inflationary bias is present in the monetary policy. Secondly, when a central bank is not publicly perceived as committed to fighting inflation, then the cost of disinflating may be more severe than might otherwise be. In both cases, the link to the credibility problem is that as long as wage and price-setting beha-

---

[13] See Woodford (1998) for a case in which the inflation/output trade-off arises due to the addition of an interest rate (smoothing) target into the conventional central bank's loss function.

viour is forward-looking, inflation depends on the expected future course of the monetary policy.

In this sense, both issues share a common consequence. That is, if a central bank is able to enhance its credibility by establishing a commitment, then it will be able to reduce inflation at a lower cost in terms of output contraction. This occurs because under commitment, the central bank exploits the ability to manipulate (guide) private sector's expectations of the future.

The findings from Clarida, Galí, and Gertler (1999) also reveal that when the central bank desires to push output above its natural level, the resulting equilibrium is suboptimal, given that the economy shows an inflation rate above its target without any gain in terms of output. This result arises because the private sector incorporates central bank's true aspirations, in order to perfectly forecast future inflation. As originally indicated by Rogoff (1985), they also find that designating a "conservative" central banker with a greater distaste for inflation than the rest of the society, reduces the effect of the inefficient inflationary bias, observed under discretion. However, they also argue that this is not a magic solution, because designating an ultraconservative central banker might also reduce overall welfare, given the (previously mentioned) inflation/output trade-off.

Probably, one of the major illuminating ideas from Clarida, Galí, and Gertler (1999) is their explanation regarding the gains from enhancing credibility. Indeed, they show that even under the absence of an inflationary bias, as long as price-setting behaviour depends on expectations of the future state of the economy, then the gains from commitment arise because the short-run trade-off between inflation and output is improved. They also demonstrate that in such a case, the optimal result from commitment is similar to the solution under discretion, when the central bank assigns a greater cost to inflation than the society as a whole.

Another difference between the case of commitment and the case of discretion is the resulting response function of the interest rate. The response in the case of constrained commitment[14] is even more reactive to changes in expected inflation. That is, under commitment, inflation converges more rapidly to its target. The reason is that given the improved output/inflation trade-off, the central bank can afford to increase interest rates by a larger amount, in response to an increment in expected inflation.

---

[14] In terms of Clarida, Galí, and Gertler (1999), the constrained commitment represents the case in which the choice of the (optimal) level of output gap is restricted to depend on the contemporaneous value of the cost push shock.

A rather different case is the one under *unconstrained* commitment. It represents the case in which the optimal choice of the level of output gap is not restricted to depend on the contemporaneous value of the cost push shock, but instead it is allowed to depend on its entire history. The difference is that, in principle, in the case of unconstrained commitment, the reaction function requires an adjustment in the *change* of the output gap as opposed to its *level*.

In this sense, it is relevant to say that under unconstrained commitment to a fix monetary policy rule, the intertemporal optimization problem requires, initially choosing (only in the first period) the optimal level of the output gap, in response to changes in inflation, exactly in the same way as it is done under discretion. However, as previously said, for subsequent periods, the policy reaction function will depend on the *change* of the output gap instead of its level.

The implication from above is, that while the optimal response under discretion, is to reduce output gap in reaction to an increase in inflation, and then, allow the output gap in subsequent periods to return back to its trend as inflation falls; the optimal reaction under unconstrained commitment is to keep reducing the output gap (in subsequent periods) as long as inflation persists above its target. As mentioned before, this is due to the ability the central bank has of manipulating agents' expectations, and by doing so, of benefiting from an improved output/inflation trade-off. This in turn, (relative to the case of discretion) accelerates the process of convergence of inflation to its target.

Probably, the most evident conclusion from the case of commitment is that when the monetary authority sticks to a fix policy rule, the resulting monetary policy is not "time consistent". This is because if the monetary authority were free to reoptimize in every subsequent period, evidently, it would opt for the same policy it carried out initially; the one which replicates the rule under discretion for the first period only.

In addition, Clarida, Galí, and Gertler (1999) show that the result from unconstrained commitment requires the central bank to partially adjust aggregate demand, in response to an increase in inflation. Such a result reflects the benefits from the strong dependence of current inflation on expected future demand. Additionally, they show that such a result is superior to any other result under discretion, even when the appointment of a "conservative" central banker is considered.

Additionally, Clarida, Galí, and Gertler (1999) also study the case of imperfect information and parameter uncertainty. The resulting conclusions from the case of imperfect information and parameter uncertainty imply that the optimal policy rules represent the certainty equivalent versions of the case under perfect information, which in practice, requires the use of forecasts for the target variables

instead of their ex-post observed values. They also claim that, relative to what the economic theory suggests, the smoother path of the interest rates, observed in practice, might well be explained by the presence of parameter uncertainty.

In addition, they propose that in the case when *small* output gap deviations involve a greater cost than *small* departures of inflation from its target, then the optimal approach to disinflation should be "opportunistic". In practice, it implies that the central bank should follow an inflation targeting policy around a zone instead of targeting inflation around a particular value.

Finally, Clarida, Galí, and Gertler (1999) demonstrate the robustness of their results by analyzing the case with endogenous output and inflation persistence. The findings show that the results under discretion also apply under the presence of endogenous output and inflation inertia. However, one of the major differences is that in the case of endogenous output and inflation persistence, the resulting monetary policy affects not only the gap between inflation and its target, but also the speed (or rate) of convergence of inflation to its target.

1.2 On Full And Partial Dollarization And Exchange Rate Risk

Perhaps the most remarkable debate during the recent years has been the discussion concerning currency regime choices for emerging-market economies. Calvo and Reinhart (2000 and 2001) and Hausmann, Panizza, and Stein (2000) have put forward the argument in favour of full dollarization and against floating. In contrast, Edwards (2001) has accused the defenders of full dollarization of engaging in "misleading advertising".

On the other hand, Hanke (2002) and Ghosh, Gulde, and Wolf (1998) have made the case for currency boards. Williamson (2000) has recommended a "BBC" regime combining a basket peg, a band, and a crawl. In addition, Larrain and Velasco (2001) have emphasized the benefits from managed floating against "hard pegs". Finally, Crokett (1994), Eichengreen (1994), Summers (2000), and Fischer (2001) have all defended the "bipolar"[15] perspective of currency regimes[16].

---

[15] The "bipolar" point of view, regarding currency regime choices, asseverates that the only sustainable currency regimes for emerging-market economies heavily affected by private capital markets are either a "float" or a "hard fix". A hard fix is usually associated to either currency boards or agreements in which a country abandons its national currency. Regularly, the abandonment of a national currency involves either becoming a member of a currency union or adopting the currency of another country (which is referred to throughout this paper as full dollarization).

In terms of Goldstein (2002), there are three major findings regarding the discontent with currency regimes. Firstly, "soft pegs" and simple "crawls" have exhibited a very low resistance to crises. In deed, as expressed by Fischer (2001) the majority of the financial crises during the 1990's, have been related to either a fixed peg or crawling band exchange rate regimes[17]. Secondly and particularly brought to light during the recent crisis in Argentina, a "hard fix" (e.g. a currency board) is neither free of speculative attacks, nor does give the impression to count on a practical policy instrument for overcoming recessions when monetary policy is directed from abroad. This occurs since the inflexibility associated to those currency regimes, makes it impossible to counter liquidity crises, external debt fragilities or even worse to avoid a real exchange rate overvaluation.

Finally, as previously shown by Calvo and Reinhart (2000) and Hausmann, Panizza, and Stein (2000); Goldstein (2002) also indicates that independently of the publicly declared currency regime, emerging-market economies have not been able to float in the same way industrial countries have. Additionally, all these authors indicate that in comparison to the industrialized economies, developing countries have been urged to rely more heavily on interest rate policy and on exchange rate market interventions to control the variation of the nominal exchange rate[18]. Moreover, many other authors have also pointed out that emerging-market economies have perceived less benefit from floating than what industrialized countries have.

In this sense, Hausmann, Panizza, and Stein (2000) and Calvo and Reinhart (2001) present empirical evidence suggesting that real exchange rate depreciations in emerging-market economies have usually been contractionary and have been accompanied by relatively substantial downgrades in credit ratings[19]. Therefore, the authors state that the independence of monetary policy in emerging-

---

[16] Evidently, there are also other general positions such as in Frankel (1999) and Kenen (2001) who argue that "no single currency regime is right for all countries at all times".

[17] For examples: Mexico in 1994; Indonesia, Thailand and South Korea in 1997; Brazil and Russia in 1998; Argentina, and Turkey in 2000-2001.

[18] In terms of a quadratic (welfare) loss function of the central bank; this is the equivalent of saying, that some central banks from developing countries have been urged to make the exchange rate an additional objective of monetary policy.

[19] The downgrade in credit ratings is fundamental for the analysis of the effect of a real exchange rate depreciation. In the model this is captured by an increase in the endogenously-determined risk premium.

market economies is not evidently any greater in floating rate countries than in fixed rate ones. They also indicate that depreciations in emerging-market economies have been coupled with a greater exchange rate pass-through than in the case of industrialized countries. Additionally, they find that exchange rate variability has a larger negative effect on foreign trade in developing countries, and also that floaters have registered less significant increases in the depth of their financial markets.

Goldstein (2002) wisely indicates that under the above mentioned conditions, emerging-market economies seem to be facing a "no-win situation in their choice of currency regimes". He argues that if they decide in favour of soft pegs, the result is a very high probability of a painful currency collapse. Instead, if they opt for either a hard peg or a *conventional* managed floating regime, even though they might enjoy a lower vulnerability to currency crises, the "fear of floating" combined with a high exposure to private capital market movements, or simply an inconvenient debt profile, may well be sufficient to cause unsatisfactory economic performance.

It is for this reason that the recent controversial discussion regarding currency regime choices for developing countries has been concentrated on the bipolar (corner) solution. As mentioned before, such a corner solution involves two alternatives (see footnote 14). Firstly, on one extreme, it could imply the incorporation of a "hard fix" which (in order of preference) would mean, (i) either joining a currency union, (ii) establishing full dollarization or (iii) adopting a currency board. On the other extreme, the establishment of a *sophisticated* managed float with certain specific characteristics (under partial dollarization) represents the final outstanding corner solution.

On the one hand, joining a currency union is certainly the first best in any case[20]. However in practice, such a solution might not always be feasible, given the fact that it requires either the coincidence of political interests in the institution of a regional central bank, or simply the accomplishment of the membership itself[21]. On the other hand, the recent failure of the currency board in Argentina

---

[20] The major reason is that as opposed to the cases of full dollarization or currency boards, under a currency union, the countries which abandon their national currencies do not necessarily lack an independent monetary policy. This occurs because even though the monetary policy is centralized and harmonized from abroad, such a monetary policy responds to the common interests of all members.

[21] Indeed, many steps must be taken before forming a currency union. The most basic one is reaching sufficiently high levels of intraregional trade.

has made such a solution a prohibitive one. For those reasons, the bipolar alternatives leave us with two final options: (i) either adopting full dollarization or (ii) establishing a very *specific* managed floating regime under partial dollarization. In this paper, this last alternative is presented as the optimal *second best* solution, or in other words, as the *first best available* solution[22].

Regarding the case of full dollarization, the developing country has to be willing to give up its own national currency (and therefore its monetary policy) in order to adopt the currency (and monetary policy) from another country. On the one hand, such a solution represents a gain in terms of international trade. This is because even though the evidence shows no reliable connection between short-run exchange rate volatility and the volume of trade for the case of industrial countries[23], in the case of emerging-market economies, the variability of relative prices seems to be fundamental in the explanation of movements in the volume of international trade[24].

Another evident benefit from full dollarization is that due to the absence of an exchange rate, currency mismatches are completely eliminated from the economy. Equivalently, the absence of a local currency (to attack) eliminates the possibility of a currency crisis. However, as Chang and Velasco (2000) and Roubini (2001) argue, the absence of currency mismatches does not necessarily imply that a balance sheet effect would not take place (see footnote 5). This is because under full dollarization, it is still possible to gradually affect nominal domestic prices. Indeed, if a change in relative prices is required, a gradual fall in the nominal prices (rather than a swift nominal exchange rate reaction under a float) increases the real value of the debt service relative to the price of non-tradable goods. This in turn, deteriorates corporate and bank balance sheets. In the view

---

[22] The reader must bear in mind that the first best solution has said to be the joining of a currency union. However, the reader should also keep in mind that such a solution might not always be feasible. That is why a second best solution or a first best available solution is considered.

[23] See Goldstein (1995) and Frankel (1999) for suitable explanations to this matter. In the case of Goldstein (1995), the author infers that in the case of industrial countries, the absence of a significant connection between exchange rate variability and international trade might be related to the development of hedging instruments and the growth of multinational corporations.

[24] See also McCallum (1995), Engel and Rogers (1996) and Rose (2000) for studies which argue that the presence of a common currency seems to have a larger impact upon the volume of trade than the degree of exchange rate volatility per se.

of Chang and Velasco (2000) and Roubini (2001) the adjustment could take longer under full dollarization, but it will definitely occur.

Another argument in favour of full dollarization is that it might diminish the risk of banking crises. The argument is as follows: in the absence of expectations of future devaluation, there will not be sudden bank runs (or at least those) initiated by the need to convert local-currency denominated deposits into foreign currency. However, as Rojas-Suarez (2000) argues, full dollarization would probably make it more difficult to overcome a banking crisis given the fact that the possibility of reducing the real value of bank liabilities by inflating or depreciating the currency would not exist.

In summary, the most valid arguments in favour of full dollarization seem to be those related to the gains in terms of lower inflation, greater credibility, lower interest rates, lower transaction costs in trade and investment, and the full elimination of exchange rate risk.

Regarding the disadvantages of full dollarization, probably one of the most evident shortcomings is the fact that under full dollarization, the economy lacks an independent monetary policy. This in turn, imposes restrictions in terms of the absorption of fiscal crises (when substantial fiscal deficits and debt burdens are present), or simply in response to general asymmetric shocks.

Fully dollarized economies also suffer from not having an instrument to deal with domestic financial crises since the absence of a national monetary authority makes it impossible to print money, either to act as a lender of last resort or for any other purpose. An additional outstanding disadvantage from full-dollarization is that the government from a fully dollarized economy loses the revenue from seigniorage, that is, the proceeds the central bank enjoys from issuing non-interest-bearing debt in the form of money base.

Regarding the *second best* solution, or *first best available* solution, the establishment of a *specific* managed floating regime[25] under partial dollarization seems to be the most favourable present alternative. The reason why it has to consider and include the presence of partial dollarization is because, as mentioned in the Introduction, most emerging market economies which still issue a domestic currency, exhibit high levels of partial dollarization.

---

[25] In order to agree with the label assigned by Goldstein (2002) such a regime could be referred to as “Managed Floating Plus”.

As mentioned before, most currencies from emerging-market economies have an "original sin". In terms of Eichengreen and Hausmann (1999), this implies that "…the domestic currency cannot be used to borrow abroad or to borrow long term, even domestically". In practice, this means that there are only a few currencies worldwide which can play the role of being universal stores of value[26].

Table 1. Percentage of External Debt
Denominated In Local Currency as of December 1999

LoansfromInternationalBanks			*InternationalDebtSecurities*		
Country	*Banks*	*OtheBorrowers*	*Corporate Issuers*	*Financial Institutions*	*Public Sector*
Argentina	5	-	3	1	2
Chile	8	-	-	-	-
China	-	9	-	-	-
Colombia	3	-	-	-	-
CzechRepublic	23	5	-	-	-
HongKong	3	18	14	18	25
Hungary	4	1	-	-	-
India	9	2	-	-	-
Indonesia	-	7	2	-	-
Israel	1	1	-	-	-
Mexico	9	-	-	-	-
Peru	2	-	-	-	-
Poland	14	3	12	-	-
Russia	27	1	-	-	-
SaudiArabia	4	3	-	-	-
SouthAfrica	30	11	37	73	-
SouthKorea	2	8	-	-	-
Thailand	3	7	-	28	1
Venezuela	8	1	-	-	

Cont.

[26] At the time of writing this paper, the currencies considered universal stores of value are: the U.S. dollar, the euro, the yen, and the pound.

Memorandum					
Germany[27]	61	62	64	56	99
Japan	61	29	44	28	16
USA	10	26	44	36	13
UK	81	85	78	83	95

Source: Hawkins and Turner (2000).

Table 1, which is available from Hawkins and Turner (2000)[28], shows that emerging market economies have much smaller percentages of external debt denominated in their own local currency. Moreover, in the specific case of international debt securities, apart from a few evident cases like Hong Kong, and South Africa, the percentage of external debt issued by corporate firms, the public sector or through financial institutions is either zero or very low. It also shows that local currency-denominated external debt is more extensive in the case of international bank loans than in any other case. However, for most of the countries, apart from the case of Czech Republic, Poland, Russia, and South Africa, such percentages do not exceed a single digit.

In this sense, Table 1 presents evidence of the so-called "original sin"[29]. Moreover, in the absence of hedging instruments, which seems to be the case in most emerging market economies, and following Eichengreen and Hausmann (1999), it is inferred that as long as an "original sin" remains present, investments in emerging market economies are inexorably accompanied by either currency mismatches or maturity mismatches.

Thus, regarding again the *first best available* solution in terms of currency regimes, the establishment of a *specific* managed floating regime under partial dollarization should address the problem of currency mismatches. This can be done in terms of Goldstein (2002) by developing hedging instruments in the emerging market economies. However, it is the view of this paper that as developing a market for hedging instruments in the emerging market economies might take some time; imposing a *currency-matching* rule to the private sector in order

[27] As of December 1999, the German mark was still considered a universal store of value at least for the case of the European Union.

[28] For some developing countries, the results might have been overestimated because it is assumed that all loans which have not been denominated in a major foreign currency are denominated in the country's local currency.

[29] See Knight, Schembri, and Powell (2000), Kenen (2001), and Goldstein (2002) for positions which rather conclude that the "original sin" hypothesis can be excessively pessimistic.

to reduce the "fear of floating" can facilitate the introduction of a currency regime, able to retain the benefits from both a partial dollarization under floating, and an independent monetary policy.

Finally, regarding the monetary policy framework, even though it has to be acknowledged that emerging market economies confront greater obstacles in the implementation of inflation targeting than industrialized countries, such a framework seems to have interested most developing countries. Thus, for example Truman (2001) includes in his group of "potential" candidates for inflation targeting: Argentina, China, Ecuador, Hong Kong, Hungary, India, Indonesia, Malaysia, Nigeria, the Philippines, Romania, Singapore, Taiwan, Turkey, and Venezuela. In this sense, the following section deals directly with the discussion regarding the extension of inflation targeting schemes to the partially-dollarized open economy.

1.3 On Partially-Dollarized Economy Inflation Targeting

Certainly, Svensson's (2000) work represents one of the major contributions to the study of open economy inflation targeting. He describes the monetary regime under inflation targeting as a framework which usually counts on: (i) a clearly defined quantitative inflation target, (ii) an "inflation-forecast-targeting" procedure, and (iii) a high degree of transparency and accountability.

Regarding the inflation target, it usually implies either a range or a specific point target. In the case of a range target, regularly it fluctuates (across countries) from 1.5 to 3.0 percent (per year). In relation to the inflation-forecast-targeting procedure, it is characterized by an inflation forecast estimate which depends upon current available information, a specific interest rate path, the central banks' structural model and further discretional adjustments derived from extra-model information.

It is the lags in the transmission of monetary policy, the central bank's incomplete control of inflation and the need to incorporate a forward-looking dimension, which makes it necessary to use of an inflation-forecast-targeting procedure. However, the resulting inflation forecast estimate is used only as an intermediate target variable. Additionally, the interest rate path is designed to be consistent with a predetermined target assigned to the inflation forecast (the so-called intermediate target).

Such an intermediate target can be explicit or implicit; however, in any case, at some particular horizon, it has to coincide with the (announced) quantitative inflation target. Therefore, the designed interest rate path determines the rule for

current interest rate setting. Nevertheless, such interest rate rule is not a prescribed (or predetermined) one, but instead, it results from an endogenously determined response function, which makes the interest rate depend on all the relevant information. Indeed, in the case of the open economy, the interest rate also depends on external variables such as international interest rates, foreign output and foreign inflation.

Regarding transparency and accountability, Svensson (2000) indicates that under an inflation targeting framework, central banks frequently issue "Inflation Reports", which are mainly meant to stimulate, notify and explain to the general public the adopted decisions regarding the course of the monetary policy. In most cases, such reports explain (if necessary) the reasons for the presence of deviations from the originally announced targets, as well as the appropriate future measures to be taken in order to correct such deviations.

As previously outlined in Svensson (1998), Svensson (2000) also suggests that inflation targeting can be seen as the "explicit announcement and assignment of a relatively specific loss function to be minimized by the central bank". Additionally, he conjectures that the inflation targeting procedure can be seen as a mechanism which guarantees that the first order conditions from the minimization of the (welfare) loss function are approximately accomplished.

Finally, Svensson (2000) also considers the transparency and accountability observed under an inflation targeting framework as a means to let the general public validate the achievement of such first order conditions. Moreover, Faust and Svensson (1997) claim that a greater transparency makes the reputation of the central banks more vulnerable, and therefore increases the cost from modifying the originally announced policy. In that sense, Svensson (2000) believes that inflation targeting relative to any other policy regime, embodies the strongest commitment to an optimizing policy, and therefore it can be perfectly represented as a minimization process of a specific (welfare) loss function.

Svensson (1998 and 2000) introduces a small-open economy macroeconomic model with a forward-looking behaviour. Specifically, the model includes realistic lags and imperfect control of inflation. As in the closed economy, the conventional transmission channels for monetary policy are the *aggregate-demand channel* and the *expectations channel*. However, in the open economy, the exchange rate introduces additional channels, the dynamics of which involve diverse lags.

In the case of the conventional channels, and particularly, in the case of the aggregate demand channel, given nominal rigidities, the central bank can affect short-term real interest rates. This, in turn affects the aggregate demand (with a

lag), and finally inflation (with an additional lag). Through the *expectations channel*, monetary policy affects expectations about future inflation, which through the practice of price and wage setting finally affects actual inflation (with a lag).

The connotation of the real exchange rate in the model is vital. Given the fact that most small-open economies present a high share of imported final goods, exchange rate variations have a great impact upon CPI inflation through the so-called immediate *direct exchange rate channel*.

Additionally, as the real exchange rate affects the relative price between domestic goods and foreign goods, and consequently, as that has an effect on both the domestic and foreign demand for domestically produced goods, the exchange rate contributes to the *aggregate-demand channel* in the transmission of monetary policy. Finally, as in the case of final imported goods, exchange rate variations which have an impact upon the domestic price of imported inputs, affect the cost of domestically produced goods.

An additional importance of the exchange rate is that, as an asset price, it responds to a forward-looking behaviour, which makes expectations about this variable a fundamental mechanism for the economy. Moreover, given the flexibility of the exchange rate, it reacts immediately in response to certain external shocks, such as shocks to foreign inflation and international interest rates.

As previously defined in Svensson (1998), Svensson (2000) also differentiates between "strict inflation targeting" and "flexible inflation targeting"[30]. In the first case, the central bank's welfare loss function incorporates inflation stabilization as the unique objective of monetary policy. In the case of flexible inflation targeting, other objectives enter into the loss function. For instance, among others, such objectives might include: a concern for output stabilization or simply for interest rate smoothing. The implications are that, under strict inflation targeting the monetary policy is more responsive and therefore, inflation converges more rapidly to its target. On the contrary, under the case of flexible inflation targeting, that is, when the central bank is also concerned with output stabilization or any additional goal, the convergence of inflation to its target is more gradual.

Certainly, most inflation-targeting-countries have preferred targeting CPI inflation than just domestic inflation. The difference between CPI inflation and domestic inflation is that domestic inflation only considers the inflation of

---

[30] Recall that in terms of Clarida, Galí, and Gertler (1999) "strict inflation targeting" is equivalent to the case of "extreme inflation targeting".

domestically produced goods, while CPI inflation includes in addition to regular domestic inflation, the inflation (in domestic prices) of final imported goods. Thus, under CPI inflation targeting, the direct exchange rate channel becomes extremely relevant.

In this sense, when the central bank is only concerned with stabilizing inflation, that is, when the central bank operates under strict CPI inflation targeting, the direct exchange rate channel represents an effective instrument to achieve inflation stabilization at a reasonably short horizon. As mentioned before, the consequences of strict CPI inflation targeting is a more rapid convergence of inflation to its target, and a greater frequency of adjustment of interest rates. However, the cost of strict CPI inflation targeting is that it may cause a potentially greater variability in other macroeconomic variables.

In the case of flexible CPI inflation targeting, that is when output or any other variable represents an additional concern for the central bank, the resulting policy usually implies a lower frequency of adjustments of the interest rate, and probably also a lower variability in other macroeconomic variables.

Svensson (2000) also considers the case of the so-called "Monetary Policy Indices" (MCIs). MCIs usually combine a short-term interest rate and the exchange rate in an index which attempts to capture the impact of monetary policy on both the aggregate demand and inflation. Svensson (2000) gives only limited support for a specific MCI. In his model the resulting specific index (which only has an impact upon aggregate demand) combines the expected real exchange rate and the expected long real interest rate rather than the observable current rates. Thus, he argues that "The monetary policy impact on inflation, which is transmitted via several different channels with different lags, is too complex to be summarized by any single index".

Regarding the problems related to the implementation of an inflation targeting framework, in the case of the partially-dollarized economy, the major inconvenience is (as previously argued) the existence of a "fear of floating". When a "fear of floating" is present, there are incentives to make the exchange rate an additional objective of the monetary policy[31]. As previously mentioned, this is related to both the probability of occurrence of balance sheet problems, and also

[31] On the one hand, if the degree of pass-trough is very high, that is if a nominal depreciation causes swift proportional nominal price increases, then the fear of floating is related to the repercussions upon inflation. In the opposite case, when the degree of pass-trough is very low, the concern regarding a nominal depreciation is the deterioration of firms' balance sheets given the presence of foreign-currency-denominated liabilities.

(implicit from previous comments) to the relative importance of the degree of exchange rate pass-through to domestic prices, which in turn, affects inflation. In the last case, given that the degree of exchange rate pass-through depends on wage and price setting behaviour, this problem cannot be addressed easily, and probably it might require the development of hedging instruments or additional mechanisms. However, in the case of balance sheet problems, this paper addresses this difficulty by imposing the previously-called *currency-matching* rule.

As long as there are no balance sheet problems at the corporate and bank firms' level, and assuming that both households and (mainly) the public sector are covered against exchange rate risk, then the monetary policy would not face contradictory objectives. The major relevance of the nominal exchange rate would then be its impact upon domestic prices and nominal interest rates.

The next section introduces the model and the endogenous risk premium. In the absence of the *currency-matching* rule, the risk premium behaviour reacts to two ambiguous exchange rate effects: the competitiveness effect, and the balance sheet effect. When the *currency-matching* rule is present, the balance sheet effect disappears and overall performance is considerably improved.

2.1 An Open-Economy Macroeconomic Model

The following model was previously merged by Morón and Winkelried (2002) who combined an endogenous risk premium from Cespedes and others (2000) with Svensson's (2000) original model[32]. As previously explained the model considers lags in the transmission of monetary policy and imperfect control of inflation. The role of the exchange rate in the model is crucial to both the transmission of monetary policy and the determination of the investors' risk premium.

Specifically, the endogenous risk premium in Cespedes and others (2000) captures the two ambiguous effects from a real exchange depreciation: the competitiveness (or substitution) effect and the balance sheet effect. Finally, as previously explained, the forward-looking behaviour is fundamental in the determination of the aggregate demand, inflation and the exchange rate.

The short-run aggregate supply (Phillips) curve takes the following form:

---

[32] For those readers interested with the microfoundations, Svensson (1998) presents the derivation of the aggregate supply (Phillips) curve and the aggregate demand equation, and Cespedes and others (2000) present the derivation of the endogenous risk premium.

$$\Pi_{t+2} = \alpha_{\Pi}\ \Pi_{t+1} + (1-\alpha_{\Pi})\Pi_{t+3/t} + \alpha_{y}\ y_{t+1/t} + \alpha_{q}\ q_{t+2/t} + \varepsilon_{t+2} \qquad (1)$$

In order to obtain a stationary system all variables (except the interest rate) have been expressed in logs as a measure of deviation from their long-run equilibrium (natural) level. Throughout this paper, the notation $V_{t+\tau/t}$ refers to the rational expectations of "$V_{t+\tau}$" using all the relevant information available at time "t". Moreover, Π_t refers to domestic inflation at time "t" which is a variable predetermined two periods in advance. Equivalently, y_t denotes the output gap at time "t" which is a variable predetermined one period in advance (see equation (2)). All the above coefficients are positive constants. Particularly, in the case of the inflationary inertia coefficient, this is less than one ($0 \pi \alpha_{\Pi} \pi 1$). Finally, ε_{t+2} denotes a "cost-push" shock assumed to be *i.i.d.* and of mean zero.

The aggregate demand equation (in terms of the output gap) is as follows:

$$y_{t+1} = \beta_y\ y_t - \beta_r\ r_{t+1/t} + \beta_y^{*} y^{*}_{t+1/t} + \beta_q\ q_{t+1/t} - \beta_{\varphi}\ \varphi_{t+1/t} + \eta_{t+1} \qquad [33]\ (2)$$

Equivalently, as before, all coefficients are positive (with $0 \leq \beta_y \pi 1$), and η_{t+1} is a zero mean *i.i.d* shock. The variables y_t^{*}, r_t , and φ_t refer to foreign demand, the short-term real interest rate, and the risk premium respectively, while q_t is the real exchange rate and by definition is expressed as:

$$q_t \equiv s_t + p_t^{*} - p_t \qquad (3)$$

---

[33] Note that this equation differs from the one in Svensson (1998) in that this includes a short-term real rate instead of a long-term real rate. Additionally, they also differ in that this incorporates (in an arbitrary way) the negative effect caused by an increase in the expected exchange rate risk. It is arbitrary because Morón and Winkelried (2002) do not present the corresponding underlying microfoundations. However, the negative effect upon output caused by an increase in the expected exchange rate risk can be interpreted as the result from an anticipated reduction in profits, which in turn reduces the expected availability of internal funds for investment, and hence causes a fall in output. Note also that from Svensson (1998), η_{t+1} is equivalent to $-\left(\gamma_y^{n} - \beta_y\right) y_t^{n} + \eta_{t+1}^{d} - \eta_{t+1}^{n}$.

where p_t , p_t^*, and s_t are the domestic price level, the foreign price level, and the nominal exchange rate respectively.

Also by definition, the output gap is expressed as:

$$y_t \equiv y_t^d - y_t^n \qquad (4)$$

where y_t^d is the aggregate demand, and y_t^n is the natural rate of output which is assumed to follow an exogenous stochastic process:

$$y_{t+1}^n = \gamma_y^n \, y_t^n + \eta_{t+1}^n \qquad (5)$$

in which $0 \le \gamma_y^n \; \pi \; 1$, and η_{t+1}^n represents a zero-mean (serially uncorrelated) productivity shock to the natural rate of output.

The Fisher equation holds:

$$r_t = i_t - \Pi_{t+1/t} \qquad (6)$$

where i_t is the short-term nominal interest rate and represents the central banks' monetary policy instrument.

The nominal exchange rate (s_t) satisfies the interest parity condition:

$$i_t - i_t^* = s_{t+1/t} - s_t + \varphi_t \qquad (7)$$

in which i_t^* is the foreign nominal interest rate considered to be exogenous and determined by a Taylor rule:

$$i_t^* = f_\Pi^* \, \Pi_t^* + f_y^* \, y_t^* + \xi_{i,t}^* \qquad (8)$$

where all coefficients are positive.

Both foreign output (y_t^*) and inflation (Π_t^*) are also exogenous. Equivalently, for simplicity, both are assumed to follow a first-order autoregressive process (AR (1)):

$$y_{t+1}^* = \gamma_y^* y_t^* + \eta_{t+1}^* \quad (9)$$

$$\Pi_{t+1}^* = \gamma_\Pi^* \Pi_t^* + \varepsilon_{t+1}^* \quad (10)$$

where the above coefficients are all positive and less than one ($0 \pi \gamma_y^*, \gamma_\Pi^* \pi 1$), and the disturbances (η_{t+1}^* and ε_{t+1}^*) are also (by assumption) *i. i. d*.

Finally, combining (3) and (7) in order to eliminate the non-stationary nominal exchange rate, the resulting real interest parity condition is given by:

$$q_{t+1/t} = q_t + i_t - \Pi_{t+1/t} - i_t^* + \Pi_{t+1/t}^* - \varphi_t \quad (11)$$

where φ_t is the endogenous risk premium.

2.2 An Endogenuous Risk Premium

As in Morón and Winkelried (2002), this paper incorporates an endogenous risk premium from Cespedes and others (2000) into Svensson's (2000) original model. In Cespedes and others (2000) as in Bernanke and Gertler (1989), firms' net worth determines the risk premium. Particularly, the model in Cespedes and others (2000) represents a general equilibrium model in which wages are sticky (in terms of local currency), and firms have dollarized liabilities. In such a framework the investors' risk premium can be interpreted as an exchange rate risk premium.

Under the above mentioned conditions, there is channel through which a real exchange rate depreciation can become contractionary. As a real exchange rate depreciation increases the domestic value of foreign liabilities, the net worth of non-export business firms is reduced. This in turn, increases the risk premium. However, as a real exchange rate depreciation also reduces the dollar value of real domestic output, a competitiveness effect is also present. Therefore, the overall effect of real exchange rate variations is ambiguous. In terms of Cespedes and others (2000), a *financially robust* economy is one in which the net effect

of a real exchange depreciation is expansionary. In the opposite case, the economy is said to be *financially vulnerable*.

Under liability dollarization, the equilibrium cost of external funding to firms engaged in investment projects depends on the foreign interest rate (which is exogenously determined), plus the risk premium which is determined as follows[34]:

$$\varphi_{t+1} - \varphi_t = -\psi_2 X_t + \psi_2 (y_t - q_t) - \psi_3 \left\{ \left[y_t - y_{t/t-1} \right] - \left[q_t - q_{t/t-1} \right] \right\} \qquad (12)$$

As before, all coefficients are positive.

From (12), the change in next period's risk premium is explained by three major factors. Firstly, for a given level of output, an increase in the exports demand (X_t) requires a lower level of domestic investment, which in turn implies a lower level of external funding, and therefore a lower risk premium. On the other hand, a second effect, which in particular can be interpreted as the substitution or competitiveness effect, implies that a decrease in the dollar value of real output (resulting from either a reduction in y_t or an increase in q_t) requires lower levels of investment, which as well, implies a lower level of external funding, and therefore a smaller risk premium.

Finally, the last term in (12) captures the so-called balance sheet effect resulting from an unanticipated depreciation, which causes a reduction in firms net worth due to an unexpected fall in the dollar value of real output. Thus, the balance sheet effect can be caused by either a sudden decrease in the value of real output (firms' real income), or also by an unexpected real exchange rate depreciation which increases the burden of dollarized liabilities in terms of domestic currency. However, in any case, the deterioration of firms' balance sheets increases investors' risk premium.

---

[34]Cespedes and others (2000) assume underdevelopment of the local financial market. Under such conditions, firms which have limited resources to auto-finance investment projects will have to compensate lenders with a larger risk premium. Such a risk premium represents the difference between the cost of external funding and the opportunity cost of internal funding. Thus, the risk premium depends inversely on firms' net worth.

By assuming that exports (X_t) are proportional to foreign demand, that is, exports are a linear function of foreign demand, and that the risk premium is exposed to *i.i.d* shocks($\xi_{\varphi t+1}$), (12) can be reparameterized as:

$$\varphi_{t+1} = \varphi_t - \psi_1 \, y_t^* + (\psi_2 - \psi_3)(y_t - q_t) + \psi_3 \left\{ \left[y_{t/t-1} - q_{t/t-1} \right] \right\} + \xi_{\varphi,t+1} \quad (13)$$

The elasticity of the risk premium to the real exchange rate is then given by:

$$\frac{\partial (\varphi_{t+1} - \varphi_t)}{\partial q_t} = \psi_3 - \psi_2 = \lambda \quad (14)$$

Following Cespedes and others (2000), in a *financially vulnerable* economy λ is positive implying a lower competitiveness effect (ψ_2) relative to the balance sheet effect (ψ_3), in which case a real depreciation is contractionary for the economy. Inversely, when λ is negative implying a greater competitiveness effect (ψ_2) relative to the balance sheet effect (ψ_3), a real depreciation is expansionary and hence the economy is *financially robust*.

For instance, consider the case in which the state of the economy requires the central bank to reduce the interest rate in order to stabilize output. Given such a reduction in the interest rate, it can be inferred from equation (**11**) that in order to maintain the portfolio balance; the real exchange rate must have to depreciate.

Now assume that the economy is financially exposed to real exchange rate risk, that is that λ is positive, and therefore the economy is *financially vulnerable*. In such a case, as mentioned before, a current real exchange rate depreciation causes a net increase in the expected value of next period's risk premium. This is in turn predetermines next period's fall in output through two different channels (see equation (2)). Firstly, through the indirect *interest rate* channel, the expected increase in next period's risk premium causes an increment in the expected value of next period's real interest rate (offsetting the effect of the previous interest rate cut exercised by the central bank) and therefore contributes to the predetermination of next period's output reduction. However, through the direct *wealth* channel, the expected increase in next period's risk premium also predetermines a fall in output.

As mentioned before (see footnote 33) the direct *wealth* channel can be interpreted as an anticipated future reduction in firms' profits, which in turn reduces the expected future availability of internal funds for investment, and therefore contributes to next period's output reduction.

Now consider the other case of interest in which a *currency-matching* rule is implemented. In such a case, $\psi_3 = 0$ implying that λ is always negative (given ψ_2 is positive). In other words, it implies that the economy is not financially exposed to real exchange rate risk. This means that in such a case, a real exchange rate depreciation always reduces next period's risk premium and therefore, produces an expansionary effect upon next period's output.

In contrast to the previous case, an expected decrease in next period's risk premium predetermines a rise in next period's output. In this case such a rise in output is explained by a larger reduction in real interest rates through the *interest rate* channel. However, the rise in next period's output is also explained by the positive effect resulting from the anticipated increase in future firms' profits, which in turn causes an increment in the expected future availability of internal funds for investment, and therefore contributes to next period's rise in output (through the direct *wealth* channel –see footnote 33).

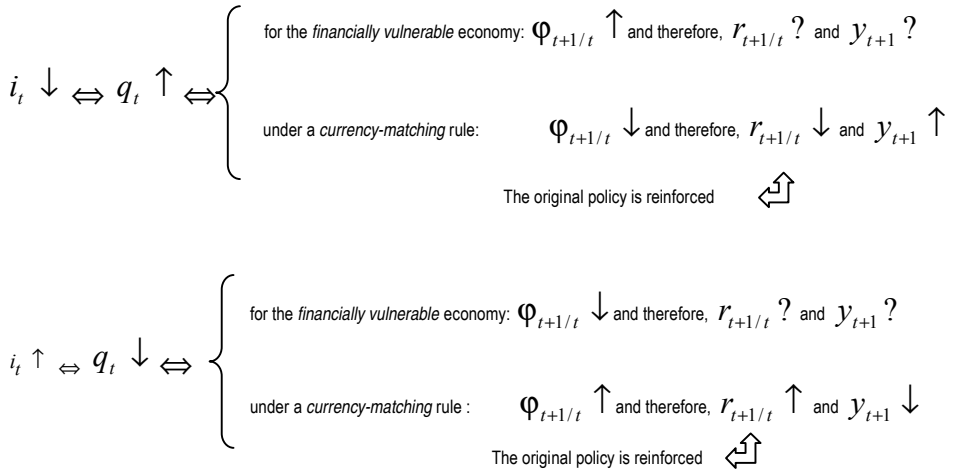
In short, under a currency-matching rule, and particularly in the case when the central bank is implementing a policy of low interest rates, the resulting real depreciation causes a reduction in next period's risk premium. This in turn, reinforces the initial interest rate cut, through a further reduction in the expected future level of the real interest rate and therefore predetermines a rise in next period's output.

Consider now the case in which the state of the economy requires the central bank to increase the interest rate in order to reduce inflation. As the increase in the interest rate causes a real appreciation, in the case of the *financially vulnerable* economy, the result is a reduction in next period's risk premium. Consequently, the reduction in next period's risk premium partially offsets the initial rise in the interest rate (by decreasing the expected value of next period's real rate) and therefore partially annuls central bank's original effort.

Finally consider again the case in which a currency-matching rule is implemented. As the increase in the interest rate causes a real appreciation, the result is instead an increase in next period's risk premium. Consequently, the increase in next period's risk premium again reinforces the initial rise in the interest rate (by increasing the expected value of next period's real rate) and therefore contributes to reinforcing central bank's original effort.

In short, under a currency-matching rule, and particularly in the case when the central bank is implementing a policy of high interest rates, the resulting real appreciation causes an increase in next period's risk premium. This in turn, reinforces the initial rise in the interest rate, through a further increase in the expected future level of the real interest rate and therefore predetermines a decrease in next period's output reinforcing central bank's original effort[35].

DIAGRAM 1. EFFECT OF AN INTEREST RATE POLICY
UNDER A CURRENCY-MATCHING RULE: COMPARISON WITH
THE CASE OF A FINANCIALLY VULNERABLE ECONOMY



Regarding the mechanisms of monetary policy, as mentioned before in the previous section, the model includes realistic lags and imperfect control of inflation[36]. The closed-economy conventional transmission mechanisms for monetary policy: the *aggregate-demand channel* and the *expectations channel* are present. The exchange rate contributes with other transmission mechanisms through: the *direct exchange rate channel*, the *aggregate-demand channel*, and also through the effect of variations in the cost of imported inputs. An additional importance of the exchange rate is that, as an asset price, it responds to a forward-looking behaviour, which makes expectations about this variable a fundamental mechanism for the economy.

---

[35] See Diagram 1.

[36] See previous section for details regarding the transmission channels of monetary policy.

2.3 The loss function and the optimal policy

The central bank's preferences are described by a quadratic (welfare) loss function *a` la* Barro-Gordon, in which CPI Inflation and output gap represent the target variables. As the targets are assumed to coincide with their natural (long-run) equilibrium levels, no inflationary bias is present. The loss function is expressed as follows:

$$L_t = \Pi_t^{c\,2} + \chi\, y_t^{\,2} \tag{15}$$

where the parameter χ measures the central bank's concern about stabilizing output. When the central bank is only concerned about inflation, that is under strict CPI inflation targeting, χ is zero. Conversely, under flexible CPI inflation targeting χ is greater than zero.

It is assumed that a fraction w represents the share of imported goods, so that:

$$\Pi_t^c = (1-w)\Pi_t + w\Pi_t^f \tag{16}$$

where Π_t^f is the domestic-currency inflation of imported final goods, which fulfils:

$$\Pi_t^f = p_t^f - p_{t-1}^f = \Pi_t^* + s_t - s_{t-1} = \Pi_t + q_t - q_{t-1}\ , \tag{17}$$

where

$$p_t^f = p_t^* + s_t \tag{18}$$

Thus, CPI inflation is given by:

$$\Pi_t^c = \Pi_t + w\left(q_t - q_{t-1}\right) \tag{19}$$

The central bank's problem is to choose i_t under discretion in order to minimize its intertemporal loss function:

$$E_t \sum_{\tau=0}^{\infty} \left[\delta^{\tau} L_{t+\tau} \right] \qquad (20)$$

where $0 \pi \delta \pi 1$, implying that in (20), when $\delta \to 1$, the limit is equivalent to:

$$E\left[L_t \right] = \text{var}\left(\prod_t^c \right) + \chi \ \text{var}\left(y_t \right) \qquad (21)$$

3.1 Parameters of the model

The model requires to be solved numerically as the solution cannot be described analytically. The parameters from the model are the same presented by Morón and Winkelried (2002). They estimate the model parameters for both the *financially vulnerable* economy and the *financially robust* economy[37]. However, in order to analyse the effect of a *currency-matching*, this paper concentrates on the parameters associated to the *financially vulnerable* economy in Morón and Winkelried (2002). Table 2 presents such parameters.

[37] Morón and Winkelried (2002) used: Australia and New Zealand as the representatives of *financially robust* economies, and Perú and Uruguay as the representatives of *financially vulnerable* economies.

TABLE 2. Parameters of the model

Aggregate Supply (1)		*Aggregate Demand* (2)	
α_{Π}	0.500	β_y	0.440
α_y	0.050	β_r	0.031
α_q	0.085	β_y^*	0.352
		β_q	0.025
		β_{φ}	0.148
Risk premium (8)		*External Variables* (9), (10) and (13)	
ψ_1	0.528	f_{Π}^*	0.760
ψ_2	0.340	f_y^*	0.430
	0.509	γ_y^*	0.900
FVE[38]	0.000	γ_{Π}^*	0.950
ψ_3			
CMR[39]			
ψ_3			

As in Morón and Winkelried (2002), in this paper it is assumed that $\chi = 0.5$ which implies a regime of flexible CPI inflation targeting. Moreover, also as in Morón and Winkelried (2002), the variance of all perturbations has been set to 0.5 (except in the cases of the aggregate supply and aggregate demand equations for which it has been set to 1.0). Equivalently, it is assumed that the share of imported goods in CPI inflation is $w = 0.3$.

[38] FVE refers to the case of the *financially vulnerable* economy.

[39] CMR refers to the case under a *currency-matching* rule.

3.2 Solution and results

The Appendix outlines how the model can be presented in a suitable state-space form. As in Svensson (2000) and Morón and Winkelried (2002), let X_t and Y_t denote the column vectors of predetermined variables and target variables respectively. Let as well x_t denote the vectors of forward-looking variables, and v_t the column vector of innovations to the predetermined variables.

$$X_t = \left(\Pi_t, y_t, \Pi_t^*, y_t^*, i_t^*, \varphi_t, y_t^n, q_{t-1}, i_{t-1}, \Pi_{t-1/t}, q_{t/t-1}, q_{t-1/t-2}, \Pi_{t/t-1}, \varepsilon_{t-1}, y_{t/t-1}\right)'$$

$$x_t = \left(q_t, \rho_t, \Pi_{t+2/t}\right)'$$

$$Y_t = \left(\Pi_t^c, y_t\right)'$$

$$v_t = \left(\varepsilon_t, \eta_t^d - \eta_t^n, \varepsilon_t^*, \eta_t^*, f_\Pi^* \varepsilon_t^* + f_y^* \eta_t^*, \xi_{i,t}^*, \xi_{\varphi,t}, \eta_t^n, 0, 0, \alpha_\Pi \varepsilon_t + \alpha_y \beta_y \left(\eta_t^d - \eta_t^n\right), 0, 0, 0, 0, 0\right)'$$

As in Svensson (2000) and Morón and Winkelried (2002), let $Z_t = \left(X_t', x_t'\right)'$ be the vector of predetermined state variables and the forward-looking variables, where $'$ denotes transpose. Denote the dimensions of X_t, x_t, Y_t, and Z_t by $n_1 = 15$, $n_2 = 3$, $n_3 = 2$, and $n = n_1 + n_2 = 18$ respectively. Then the model can be expressed as:

$$\begin{bmatrix} X_{t+1} \\ x_{t+1/t} \end{bmatrix} = A \begin{bmatrix} X_t \\ x_t \end{bmatrix} + \mathrm{B}_0\, i_t + \mathrm{B}_1\, i_{t+1/t} + \begin{bmatrix} v_{t+1} \\ 0 \end{bmatrix}$$

or equivalently as:

$$\begin{bmatrix} X_{t+1} \\ x_{t+1/t} \end{bmatrix} = A\, Z_t + \mathrm{B}_0\, i_t + \mathrm{B}_1\, i_{t+1/t} + \begin{bmatrix} v_{t+1} \\ 0 \end{bmatrix}$$

$$Y_t = C_Z Z_t + C_i i_t$$

$$L_t = Y_t' K Y_t$$

where A is an n x n $(18x18)$ matrix; B_0 and B_1 are n x 1 $(18x1)$ column vectors; C_Z is an n_3 x n $(2x18)$ matrix; C_i is an n_3 x 1 $(2x1)$ column vector; and K is an n_3 x n_3 $(2x2)$ diagonal matrix with all off-diagonal elements being zero, and with the diagonal: $(1, \chi)$. See the Appendix for a detailed explanation regarding all matrices.

The solution to the model involves a standard linear stochastic regulator problem[40]. The only inconvenience is the presence of the term $B_1 i_{t+1/t}$; however this is also resolved in the Appendix. The standard problem is solved in Oudiz and Sachs (1985), Backus and Driffill (1986), Currie and Levine (1993), and Svensson (1994 and 1998).

This paper considers the case of discretion. The reason is because it captures better reality. As Clarida, Galí, and Gertler (1999) indicate: "no major central bank makes any type of binding commitment over the future course of its monetary policy". Additionally, it also reflects the credibility problem associated to many emerging market economies.

In the case of discretion, the forward-looking variables are linear functions of the predetermined variables:

$$x_t = H X_t$$

where the matrix H is an n_2 x n_1 $(3x15)$ endogenously-determined matrix. The optimal response function is also linear in the predetermined variables:

---

[40] The Appendix gives the details on the procedure regarding the linear stochastic regulator problem.

$$i_t = f\, X_t$$

where also the matrix f is endogenously-determined with dimension: $1\text{x}\, n_1\ (1\text{x}15)$.

Thus, in general, the dynamics of the economy can be summarized as follows:

$$X_{t+1} = \mathrm{M}_{11} X_t + v_{t+1}$$

$$x_t = H\, X_t$$

$$i_t = f\, X_t$$

$$Y_t = \left(C_{Z1} + C_{Z2}\, H + C_i\ f\right) X_t$$

where the $n\ \text{x}\, n\ (18\text{x}18)$ matrix M is defined by:

$$\mathrm{M} \equiv \left(I - \mathrm{B}_1 F\right)^{-1} \left(A + \mathrm{B}_0 F\right)$$

and $F = \left(f, 0,0,0\right)$ is a $1\text{x}\, n\ (1\text{x}18)$ vector resulting from the addition of $n_2 = 3$ zeros to the $1\text{x}\, n_1\ (1\text{x}15)$ f (original) vector[41].

where M and C_z are partitioned in relation to X_t and x_t :

$$\mathrm{M} = \begin{bmatrix} \mathrm{M}_{11} & \mathrm{M}_{21} \\ \mathrm{M}_{12} & \mathrm{M}_{22} \end{bmatrix}, \text{ and } C_z = \begin{bmatrix} C_{z1} \\ C_{z2} \end{bmatrix}$$

[41] The $n_2 = 3$ zeros have been added in order to have a final $1\text{x}\, n\ (1\text{x}18)$ vector without affecting the forward-looking variables.

In the case of discretion, and in the presence of forward-looking variables, the solution involves almost all the variables contained in the model. Given the fact that all parameters are identical to the ones presented in Morón and Winkelried (2002), the results regarding the *financially vulnerable* economy coincide with the ones previously presented by them. Table 3 shows the results corresponding to the case in which a *currency-matching* rule is implemented in comparison to the case of the *financially vulnerable* economy.

TABLE 3. Optimal policy response

Economy / Condition	Π_t	y_t	Π_t^*	y_t^*	i_t^*
Financially Vulnerable	1.369	0.067	-0.587	0.432	0.524
Currency-matching rule	1.392	0.103	-0.568	0.417	0.498

Economy / Condition	φ_t	q_{t-1}	$\Pi_{t+1/t}$	$q_{t/t-1}$	$y_{t/t-1}$
Financially Vulnerable	1.197	-0.411	0.071	-0.291	0.343
Currency-matching rule	0.833	-0.409	0.103	0.000	0.000

The results vary considerably, even though the *financially vulnerable* economy and the economy under the *currency-matching* rule share most of the parameters from the model. The unique (and fundamental) exception is ψ_3 which takes the value of zero under the *currency-matching* rule. Thus, Table 3 shows that the optimal policy reaction function becomes slightly more sensitive to changes in current inflation and output gap when the *currency-matching* rule is implemented. Additionally, the function also becomes slightly more reactive to changes in expected inflation when the *currency-matching* rule is present.

As expected, the reaction function became less reactive to changes in the risk premium. However, an unexpected result is that under the *currency-matching* rule, the policy response function becomes also less reactive to changes in the foreign interest rate. As anticipated, the coefficients on previous expectations of current output and real exchange rate are zero. This is due to the elimination of the balance sheet effect (or equivalently because $\psi_3 = 0$, see equation 13).

The resulting policy reaction function seems to exploit the reinforcing properties of the *currency-matching* rule facilitating the practice of monetary policy. To illustrate this point, recall from equation (14), that the elasticity of the risk premium to the real exchange rate (λ) is always negative in the case of a *currency-matching* rule (due to $\psi_3 = 0$). Consider the case in which the central bank is interested in reducing the interest rate in order to stabilize output. The resulting

real exchange rate depreciation causes a decrease in the risk premium. This in turn, reduces the expected value of next period's real interest rate reinforcing the initial policy. Equivalently, consider now the case in which the central bank is interested in increasing the interest rate in order to put inflation back on its correct path. The resulting real exchange rate appreciation causes an increase in the risk premium. This in turn, increases the expected value of next period's real interest rate reinforcing again the initial policy.

Consider again the case in which a sudden fall in output takes place requiring immediate reaction from the central bank. To illustrate the following point, let's take the elasticity of the risk premium to the output gap:

$$\frac{\partial\left(\varphi_{t+1}-\varphi_{t}\right)}{\partial y_{t}}=\psi_{2}-\psi_{3}=\Phi \qquad (22)$$

Under the *currency-matching* rule, Φ is always positive (due to $\psi_3 = 0$). This implies that a sudden fall in output reduces next period's risk premium. In turn, this reduces the expected value of next period's real interest rate, which finally reinforces the central bank's initial low-interest rate policy. Equivalently, consider again the case in which an unexpected increase in output takes place, calling for an immediate reaction from the central bank in order to offset any positive effect on inflation. The sudden rise in output increases next period's risk premium. This in turn, increases the expected value of next period's real interest rate reinforcing again the initial policy.

A fundamental additional result is the gains in terms of welfare observed under the implementation of the *currency-matching* rule. To illustrate this, Table 4 presents the results in terms of the unconditional standard deviation of the major macroeconomic variables. Under the *currency-matching* rule, all variables show a lower volatility.

TABLE 4. Comparison of unconditional standard deviations of major macroeconomic variables under the optimal policy rule

Economy / Condition	Π_t^C	Π_t	y_t	i_t	r_t	q_t	$E[L_t]$
Financially Vulnerable	3.265	2.044	2.189	3.216	5.410	8.888	**6.574**
Currency-matching rule	2.985	1.842	2.080	2.835	4.730	7.845	**5.845**

4. CONCLUSIONS

This paper contributes to previous studies of partially-dollarized economy inflation targeting by incorporating the effect of a *currency-matching* rule. Specifica-

lly, such a rule implies imposing a restriction to credit dollarization in order to guarantee that any form of foreign-currency denominated debt (or bank credit) is solely allocated to the export business sector of the economy.

The model in this paper is a small open-economy macroeconomic model. It was previously merged by Morón and Winkelried (2002) who combined an endogenous risk premium from Cespedes and others (2000) with Svensson's (2000) original model. The model considers lags in the transmission of monetary policy and imperfect control of inflation. The role of the exchange rate is crucial to both the transmission of monetary policy and the determination of the risk premium.

The model suggests that under conditions of liability dollarization, currency mismatches, and incomplete pass-trough from the exchange rate to domestic prices, the effect of a real exchange rate depreciation becomes ambiguous for the economy, as both a favourable competitiveness effect and an unfavourable balance sheet effect have an impact upon the risk premium and the aggregate demand.

However, under the *currency-matching* rule, the model shows that real exchange rate depreciations become diaphanously expansionary, suggesting an expected reduction in the *fear of floating*, and therefore a decline in the complexity of the monetary policy. The rationale is simple, under the *currency-matching* rule, the economy is not financially exposed to real exchange rate risk, and therefore the balance sheet effect is eliminated. Thus, the only remaining effect of a real exchange rate depreciation is the favourable competitiveness effect.

The paper also compares the optimal monetary policy response and the volatility of the major macroeconomic variables, under the presence of the currency-matching rule to the case in which the rule is absent. The results are straightforward. When the economy is not financially exposed to real exchange rate risk: (i) the volatility of the major economic variables is reduced reflecting gains in terms of welfare, and (ii) the optimal policy reaction function becomes less responsive to changes in the risk premium and the foreign interest rate, and more reactive to movements in the output gap and expected inflation. The consequences from (i) and (ii) suggest that the advice that calls for liability de-dollarization in small open economies, should then solely apply to the non-export business sector.

The resulting policy reaction function seems to exploit the reinforcing properties of the *currency-matching* rule, facilitating the practice of monetary policy. For instance, when the central bank is interested in reducing the interest rate in order to respond to a sudden fall in output, the *currency-matching* rule guarantees, that both the sudden fall in output itself, and the resulting real exchange depreciation, associated to the low-interest rate policy, will cause a decline in the investors' risk

premium. This in turn, will have the effect of reducing the expected value of next period's real interest rate and therefore reinforces the central bank's initial policy.

Equivalently, when the central bank is interested in increasing the interest rate in order to respond to the increasing inflation resulting from a sudden increase in output (for instance, due to a demand shock), the *currency-matching* rule guarantees, that both the sudden increase in output itself, and the resulting real exchange rate appreciation associated to the high-interest rate policy, will cause an increase in the risk premium. This in turn, will increase the expected value of next period's real interest rate and hence will reinforce the central bank's original policy.

Regarding the discussion on currency regimes, this paper presented support for a *sophisticated* managed floating regime under partial dollarization. The reason why it has to consider and include the presence of partial dollarization is because, as previously mentioned, most emerging market economies which still issue a domestic currency, exhibit high levels of partial dollarization. However, such a regime requires the implementation of a *currency-matching* mechanism, for instance: the *currency-matching* rule proposed throughout this paper, or others such as the one proposed by Goldstein (2002) involving hedging instruments, and other methods.

As previously mentioned, the reason why a *currency-matching* mechanism has to be put into practice is to eliminate the exchange rate risk, and hence the balance sheet effect. This in turn, will simplify the implementation of monetary policy, and maintain the benefits of partial dollarization.

This paper has concentrated on the liability side of partial dollarization; however, further research should see more profound studies regarding the implications of asset dollarization under imperfect market conditions, and asymmetric information. Another motivating topic is the study of the role of the global banking industry in the expansion of international credit. Finally, other appealing areas might include: the study of the implications of domestic deposit-dollarization for the growth and stabilization of international reserves, the role of the central bank in the setting of the reserve-backing rate on dollar-deposits, and its effect upon liquidity, exchange rate stabilization, and therefore upon overall macroeconomic stability.

REFERENCES

Aghion, P., Bacchetta, P., and A. Banerjee (2000), "A Simple Model of Monetary Policy and Currency Crises", *European Economic Review*, Papers and Proceedings 44, 728-738.

Backus, D. and Driffill, J. (1986), "The Consistency of Optimal Policy in Stochastic Rational Expectations Models", *CEPR discussion paper No. 124*.

Barro R. and Gordon D. (1983), "A Positive Theory of Monetary Policy in a Natural Rate Model," *J. Polit. Econ.*, 91:4, pp. 589–610.

Bernanke, B. and Mishkin F. (1997), "Inflation Targeting: A New Framework for Monetary Policy?" J. Econ. Perspect., 11:2, pp. 97–116.

Broda Ch. and Levy E. (2001), "Endogenous Financial Dollarization*", Massachusetts Institute of Technology, Working Paper MIT*.

Calvo, G. (1983). "Staggered prices in a utility-maximizing framework", *Journal of Monetary Economics* 12, 383–398.

Calvo, G., and Reinhart C. (2000), "Fear of Floating", *University of Maryland,* w*orking paper*.

Calvo, G., and Reinhart C. (2001), "Fixing for Your Life", *Brookings Trade Policy Forum 2000: Policy Challenges in the Next Millennium,* Washington Brookings Institution.

Céspedes, L., Chang R. and Velasco A. (2000), "Balance Sheets and Exchange Rate Policy", *NBER Working Paper* 7840.

Chang, R. and Velasco A. (2000), "Exchange Rate Policy for Developing Countries", *American Economic Review,* papers and proceedings 90, No. 2, 71-75.

Clarida R., Galí J., and Gertler M. (1999), "The Science of Monetary Policy: A New Keynesian Perspective", *Journal of Economic Literature*, Vol. XXXVII (December 1999), pp. 1661–1707.

Crokett A. (1994), "Monetary Policy Implications of Increased Capital Flows", *Changing Capital Markets: Implications for Monetary Policy,* Federal Reserve Bank of Kansas City.

Currie, D. and Levine, P. (1993), "Rules, Reputation and Macroeconomic Policy Coordination", *Cambridge University Press*, Cambridge.

Eichengreen B. (1994), "International Monetary Arrangements for the 21st. Century", Washington Brookings Institution.

Eichengreen, B. and R. Hausmann (1999), "Exchange Rates and Financial Fragility", *NBER working paper 7418.*

Engle Ch. and Rogers J. (1996), "How wide is the Border?". *American Economic Review* 86, 1112-1125.

Faust J. and Svensson, L. (1997), "Credibility and Transparency: Monetary Policy with Unobservable Goals". *Working paper*.

Fischer S. (2001), "Exchange Rate Regimes: Is the Bipolar View Correct? *Journal of Economic Perspectives*, Vo. 50, No. 2, 3-24.

Frankel J. (1999), "No Single Currency Regime is Right for all Countries or at all Times" *Princeton Essays on International Finance 215,* International Finance Section, Department of Economics, Princeton University.

Ghosh A., Gulde A., and Wolf H. (1998), "Currency Boards: The Ultimate Fix", *IMF working paper,* 98/08.

Goldstein M. (2002), "Managed Floating Plus", *Institute for International Economics,* Policy Analyses in International Economics 66.

Hanke S. (2002), "Currency Boards", *The Annals of the American Academy of Political and Social Science*, January, 87-105.

Hausmann, R., Panizza U. and Stein E. (2000), "Why do Countries Float the Way They Float?", *IADB working paper 418*.

Hawkins J. and Turner P. (2000), "Managing Foreign Debt and Liquidity Crises in Emerging Economies: An Overview", *Managing Foreign Debt and Liquidity Risks*, Bank of International Settlements.

Honohan P. and Shi A. (2002). "Deposit Dollarization and the Financial Sector in Emerging Economies*". Development Research Group. The World Bank,* Working Paper No. 2748.

Kenen P. (2001), "The International Architecture: What's New, What's Missing?", *Washington Institute for International Economics*.

Knight M., Lawrence S. and Powell J. (2000), "Reforming the Global Financial Architecture: Just Tinkering around the Edges?", presented at conference on reforming the architecture of global economic institutions sponsored by the Bank of England, London (5-6 May).

Kydland, F. and Prescott E. (1977), "Rules Rather Than Discretion: The Inconsistency of Optimal *Plans," J. Polit. Econ*., 85, pp. 473–91.

Krugman, P. (1999), "Balance Sheets, the Transfer Problem and Financial Crises", *International Finance and Financial Crises*, P. Isard, A. Razin and A. Rose (eds.), Kluwer Academic Publishers.

Krugman, P. (2000), ”Analytical Afterthoughts on the Asian Crisis”, *Massachusetts Institute of Technology, working paper MIT*.

Larrain F. and Velasco A. (2001), “Exchange Rate Policy in Emerging Markets: The case for Floating”, *Harvard University*, Cambridge.

McCallum J. (1995), “National Borders Matter: Regional Trade Patterns in North America”, *American Economic Review* 85, 615-623.

Minsky, H. (1994), “Financial Instability and the Decline (?) of Banking: Public Policy Implications“, *The Jerome Levy Economics Institute of Bard College,* working paper No. 127.

Morón E. and Winkelried D. (2003). “Monetary Policy Rules for Financially Vulnerable Economies*”*, *IMF working paper,* 03/39.

Oudiz, G. and Sachs, J. (1985), “International policy coordination in dynamic macroeconomic models”, *Buiter, W.H., Marston, R.C. (Eds.), International Economic Policy Coordination*, Cambridge University Press, Cambridge.

Rogoff K. (1985), “The Optimal Degree of Commitment to an Intermediate Monetary Target”, *Quart. J. Econ.*, 100: 4, pp. 1169–89.

Rose A. (2000), “One Money, One Market: Estimating the effect of Common Currencies on Trade”, *Economic Policy 30*, 7-45.

Roubini N. (2001), “Should Argentina Dollarize or Float: The Pros and Cons of Alternative Exchange Rate Regimes and their Implications for Domestic and Foreign Debt Restructuring”, *New York University*.

Söderlind P. (1999), “Solution and estimation of RE macromodels with optimal policy”, *European Economic Review 43*, 813-823.

Summers L. (2000), “International Financial Crises: Causes, Prevention and Cures, *American Economic Review*, papers and Proceedings 90, No. 2, 1-16.

Svensson, L. (1998), “Open Economy Inflation Targeting“, to be presented at the Sveriges Riksbank-IIES Conference on Monetary Policy Rules, Stockholm, June 1998.

— (2000). “Open Economy Inflation Targeting“. *Journal of International Economics*, 50, pp.155-183.

Taylor, J. (1993), “Discretion versus Policy Rules in Practice,” *Carnegie-Rochester Conf. Ser. Public Policy*, 39, pp. 195–214.

Truman, E. (2001), "Inflation Targeting and the International Financial System: Panacea or Poison Pill?", *Washington Institute for International Economics*.

Williamson J. (2000), "Exchange Rate Regimes for Emerging Markets: Reviving the Intermediate Option", *Institute for International Economics*. Policy Analyses in International Economics 60.

APPENDIX

Initially, from rational expectations:

$$\Pi_{t+1} = \Pi_{t+1/t} + \varepsilon_{t+1} \qquad (23)$$

$$\Pi_{t+2/t+1} = \Pi_{t+2/t} + \alpha_{\Pi}\varepsilon_{t+1} + \alpha_y \beta_y \left(\eta^{d}_{+1} - \eta^{n}_{+1}\right)^{42} \qquad (24)$$

Taking the expectations of equation (1) in period t, and solving for: $(1-\alpha_{\Pi})\Pi_{t+3/t}$

$$(1-\alpha_{\Pi})\Pi_{t+3/t} = \Pi_{t+2/t} - \alpha_{\Pi}\Pi_{t+1/t} - \alpha_y y_{t-1/t} - \alpha_q q_{t+2/t} \qquad (25)$$

After finding the appropriate expressions for $y_{t-1/t}$ and $q_{t+2/t}$, and substituting into (25):

$$\begin{aligned}(1-\alpha_{\Pi})\Pi_{t+3/t} = {} & (1+\beta_r+\alpha_q)\Pi_{t+2/t} - (\alpha_{\Pi}+\beta_q+\alpha_q)\Pi_{t+1/t} \quad + \\ & (-\alpha_y\beta_y + \alpha_y\beta_{\varphi}\psi_2 - \alpha_q\psi_2)y_t \quad + \\ & -(\beta_r+\alpha_q)i_{t+1/t} + (\beta_q-\alpha_q)i_t - (\beta_q+\alpha_q)i^{*}_t \quad + \\ & \{(-\alpha_y)(\beta^{*}_y\gamma^{*}_y + \beta_{\varphi}\psi_1) + \alpha_q(f^{*}_y\gamma^{*}_y + \psi_1)\}y_t \quad + \\ & \{(-\alpha_y)(\beta_q + \beta_{\varphi}\psi_2) - \alpha_q(1-\psi_2)\}q_t \quad +\end{aligned}$$

[42] See footnote 33.

$$\left\{\left(-\alpha_y\right)\left(\beta_q\gamma_\Pi^*\right)-\alpha_q\gamma_\Pi^*\left(1+\gamma_\Pi^*-f_\Pi^*\gamma_\Pi^*\right)\right\}\Pi_t^* \quad +$$

$$\left\{\alpha_y\left(\beta_q+\beta_\varphi\right)+2\alpha_q\right\}\varphi_t \qquad (26)$$

The matrices corresponding to the following state-space form:

$$\begin{bmatrix} X_{t+1} \\ x_{t+1/t} \end{bmatrix} = A\begin{bmatrix} X_t \\ x_t \end{bmatrix} + \mathrm{B}_0\, i_t + \mathrm{B}_1\, i_{t+1/t} + \begin{bmatrix} v_{t+1} \\ 0 \end{bmatrix} \qquad (27)$$

are given by:

$$A = \begin{bmatrix}
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & \beta_y-\beta_\varphi\psi_2 & \beta_q\gamma_\Pi^* & \beta_y^*\gamma_y^*+\beta_\varphi\psi_1 & -\beta_q & -(\beta_\varphi+\beta_q) & 0 & 0 & 0 & -\beta_q & 0 & 0 & 0 & 0 & 0 & \beta_q+\beta_\varphi\psi_2 & 0 & \beta_r \\
0 & 0 & \gamma_\Pi^* & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & \gamma_y^* & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & f_\Pi^*\gamma_\Pi^* & f_y^*\gamma_y^* & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & \psi_2-\psi_3 & 0 & -\psi_1 & 0 & 1 & 0 & 0 & 0 & 0 & -\psi_3 & 0 & 0 & 0 & \psi_3 & -(\psi_2-\psi_3) & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & \gamma_y^n & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 \\
0 & 0 & \gamma_\Pi^* & 0 & -1 & -1 & 0 & 0 & 0 & -1 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
\alpha_\Pi & \alpha_y & \alpha_q\gamma_\Pi^* & 0 & -\alpha_q & -\alpha_q & 0 & 0 & 0 & -\alpha_q & 0 & 0 & 0 & 0 & 0 & \alpha_q & 0 & 1-\alpha_\Pi \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & \beta_y-\beta_\varphi\psi_2 & \beta_q\gamma_\Pi^* & \beta_y^*\gamma_y^*+\beta_\varphi\psi_1 & -\beta_q & -(\beta_\varphi+\beta_q) & 0 & 0 & 0 & -\beta_q & 0 & 0 & 0 & 0 & 0 & \beta_q+\beta_\varphi\psi_2 & 0 & \beta_r \\
0 & 0 & \gamma_\Pi^* & 0 & -1 & -1 & 0 & 0 & 0 & -1 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 \\
A & B & C & D & E & F & G & H & I & J & K & L & M & N & O & P & Q & R
\end{bmatrix}$$

where the elements corresponding to the last row are given by:

$$\mathrm{A} = 0$$

$$\mathrm{B} = \left\{-\alpha_y\beta_y+\alpha_y\beta_\varphi\psi_2-\alpha_q\psi_2\right\} \div \left\{1-\alpha_\Pi\right\}$$

$$\mathrm{C} = \left\{-\alpha_y\left(\beta_q^*\gamma_\Pi^*\right)-\alpha_q\gamma_\Pi^*\left(1+\gamma_\Pi^*-f_\Pi^*\gamma_\Pi^*\right)\right\} \div \left\{1-\alpha_\Pi\right\}$$

$$D = \left\{ -\alpha_y \left(\beta_y^* \gamma_\Pi^* + \beta_\varphi \psi_1 \right) - \alpha_q \left(f_y^* \gamma_y^* + \psi_1 \right) \right\} \div \left\{ 1 - \alpha_\Pi \right\}$$

$$E = \left\{ -\left(\beta_q + \alpha_q \right) \right\} \div \left\{ 1 - \alpha_\Pi \right\}$$

$$F = \left\{ \alpha_y \left(\beta_q + \beta_\varphi \right) + 2\alpha_q \right\} \div \left\{ 1 - \alpha_\Pi \right\}$$

$$G = 0$$

$$H = 0$$

$$I = 0$$

$$J = \left\{ -\left(\alpha_\Pi + \beta_q + \alpha_q \right) \right\} \div \left\{ 1 - \alpha_\Pi \right\}$$

$$K = 0$$

$$L = 0$$

$$M = 0$$

$$N = 0$$

$$O = 0$$

$$P = \left\{ -\alpha_y \left(\beta_q + \beta_\varphi \psi_2 \right) - \alpha_q \left(1 - \psi_2 \right) \right\} \div \left\{ 1 - \alpha_\Pi \right\}$$

$$Q = 0$$

$$R = \left\{ 1 + \beta_r + \alpha_q \right\} \div \left\{ 1 - \alpha_\Pi \right\}$$

$$B_0 = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 1 \\ 0 \\ 1 \\ 0 \\ \alpha_q \\ 0 \\ 0 \\ 1 \\ -1 \\ [\beta_q - \alpha_q] \div [1 - \alpha_\Pi] \end{bmatrix} \qquad B_1 = \begin{bmatrix} 0 \\ -\beta_r \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 1 \\ -\beta_r \\ 0 \\ 0 \\ -[\beta_r + \alpha_q] \div [1 - \alpha_\Pi] \end{bmatrix}$$

$$K = \begin{bmatrix} \mathbf{1} & \mathbf{0} \\ \mathbf{0} & x \end{bmatrix} \qquad C_i = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

$$C_z = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 & -w & 0 & 0 & 0 & 0 & 0 & 0 & 0 & w & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

The case of discretion involves a linear regulator problem with forward-looking variables and expected future controls, which implies choosing i_t in period t to minimize (20) with $0 \pi \delta \pi 1$ and subject to:

$$\begin{bmatrix} X_{t+1} \\ x_{t+1/t} \end{bmatrix} = A \begin{bmatrix} X_t \\ x_t \end{bmatrix} + B_0 \, i_t + B_1 \, i_{t+1/t} + \begin{bmatrix} v_{t+1} \\ 0 \end{bmatrix}, \qquad (27)$$

$$L_t = Y_t' \, K \, Y_t \,, \qquad (28)$$

$$Y_t = C_Z \, Z_t + C_i \, i_t \qquad (29)$$

$$i_{t+1} = f_{t+1}\, X_{t+1} \quad \text{,and} \tag{30}$$

$$x_{t+1} = H_{t+1}\, X_{t+1} \tag{31}$$

where f_{t+1} and H_{t+1} are determined by the decision problem in period $t+1$. Initially, on combining (27) and (30) in order to eliminate the term: $i_{t+1/t}$ gives the new simplified system:

$$\begin{bmatrix} X_{t+1} \\ x_{t+1/t} \end{bmatrix} = \widetilde{A}_t \begin{bmatrix} X_t \\ x_t \end{bmatrix} + \widetilde{\mathrm{B}}_{0t}\, i_t + \begin{bmatrix} v_{t+1} \\ 0 \end{bmatrix}, \tag{32}$$

where:

$$\widetilde{A}_t \equiv \left(I - \mathrm{B}_1 F \right) A$$

$$\widetilde{B}_{0\,t} \equiv \left(I - \mathrm{B}_1 F \right) B_0$$

where as previously said, $F = (f, 0,0,0)$ is a $1\mathrm{x}\, n$ $(1\mathrm{x}18)$ vector resulting from the addition of $n_2 = 3$ zeros to the $1\mathrm{x}\, n_1$ $(1\mathrm{x}15)$ f vector.

In order to derive the solution, recall that in the discretionary case, the policy maker is free to reoptimize every period. When the central bank reoptimizes in every period, it takes private sector's expectations as given. Therefore, private agents' expectations will necessarily be consistent with actual policy. Given the fact that the model is linear-quadratic, the solution in period $t+1$ gives both, a value function which is quadratic in the state variables $X'_{t+1} V_{t+1} X_{t+1} + \mathrm{w}_{t+1}$ (where V_{t+1} is a positive semidefinite matrix, and w_{t+1} is a scalar); and also a linear relation between the forward looking variables and the state variables $x_{t+1} = H_{t+1}\, X_{t+1}$. Private agents form expectations about x_{t+1} accordingly. The value function of the central bank in time t satisfies the Bellman equation:

$$X_t' V_t\, X_t + w_t = \min_{i_t} \left\{ Z_t'\, Q\, Z_t + 2 Z_t'\, U\, i_t + i_t' R i_t + \delta\, E_t \left(X_{t+1}'\, V_{t+1}\, X_{t+1} + w_{t+1} \right) \right\} \tag{33}$$

s. t. $x_{t+1/t} = H_{t+1}\, X_{t+1/t}$, given equation (32) and X_t .

where $Q \equiv C_z^{'} K C_z$, $U \equiv C_z^{'} K C_i$, and $R \equiv C_i^{'} K C_i$.

The combination of the two restrictions: $x_{t+1} = H_{t+1}\, X_{t+1}$ and equation $(\mathbf{32})$; and the partition of the matrices $\widetilde{A}_t$, $\widetilde{\mathrm{B}}_{0t}$, Q and U in accordance to $\left(X_t^{'}, x_t^{'}\right)^{'}$ into:

$$\widetilde{A}_t = \begin{bmatrix} \widetilde{A}_{t11} & \widetilde{A}_{t12} \\ \widetilde{A}_{t21} & \widetilde{A}_{t22} \end{bmatrix}, \quad \widetilde{\mathrm{B}}_{0t} = \begin{bmatrix} \widetilde{\mathrm{B}}_{0t1} \\ \widetilde{\mathrm{B}}_{0t2} \end{bmatrix}, \quad Q = \begin{bmatrix} Q_{11} & Q_{12} \\ Q_{21} & Q_{22} \end{bmatrix}, \quad U = \begin{bmatrix} U_1 \\ U_2 \end{bmatrix}$$

allow to rewrite (33) as:

$$X_t^{'} V_t\, X_t + w_t = \min_{i_t} \left\{ X_t^{'}\, Q^{*}\, X_t + 2 X_t^{'}\, U^{*}\, i_t + i_t^{'} R^{*}\, i_t + \delta E_t \left(X_{t+1}^{'}\, V_{t+1}\, X_{t+1}^{'} + w_{t+1} \right) \right\} \quad (34)$$

s.t. $X_{t+1} = A_t^{*}\, X_t + B_{0t}^{*} i_t + v_{t+1}$, given X_t .

where the starred matrices are defined by the following algorithm:

$$D_t = \left(\widetilde{A}_{t22} - H_{t+1} \widetilde{A}_{t12} \right)^{-1} \left(H_{t+1} \widetilde{A}_{t11} - \widetilde{A}_{t21} \right)$$

$$G_t = \left(\widetilde{A}_{t22} - H_{t+1} \widetilde{A}_{t12} \right)^{-1} \left(H_{t+1} \widetilde{\mathrm{B}}_{0t1} - \widetilde{\mathrm{B}}_{0t2} \right)$$

$$A_t^{*} = \widetilde{A}_{t11} + \widetilde{A}_{t12} D_t$$

$$B_{0t}^{*} = \widetilde{\mathrm{B}}_{0t1} + \widetilde{A}_{t12} G_t$$

$$Q_t^{*} = Q_{11} + Q_{12} D_t + D_t^{'} Q_{21} + D_t^{'} Q_{22} D_t$$

$$U_t^* = Q_{12}G_t + D_t' Q_{22}G_t + U_1 + D_t' U_2$$

$$R_t^* = R + G_t' Q_{22}G_t + G_t' U_2 + U_2' G_t$$

$$f_t = -\left(R_t^* + \delta B_{0t}^{*'} V_{t+1} B_{0t}^*\right)^{-1}\left(U_t^{*'} + \delta B_{0t}^{*'} V_{t+1} A_t^*\right)$$

$$H_t = D_t + G_t f_t$$

$$V_t = Q_t^* + U_t^* f_t + f_t' U_t^{*'} + f_t' R_t^* f_t + \delta\left(A_t^* + B_{0t}^* f_t\right)' V_{t+1}\left(A_t^* + B_{0t}^* f_t\right)$$

Finally, the algorithm implies an iteration backwards in time until convergence to the steady-state point (f, H, V) is achieved [43].

[43] For further details, see Söderlind P. (1999) or his webpage: http://home.tiscalinet.ch/paulsoderlind/