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Real Exchange Rate Policies for Economic Development

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Abstract

This paper analyzes the role of real exchange rate (RER) policies for promoting economic development. Markets provide a suboptimal amount of investment in sectors characterized by learning spillovers. We argue that a stable and competitive RER policy may correct externalities and other market failures, enabling the development of sectors with a larger contribution to inclusive economic growth. Optimality also requires a system of multiple effective exchange rates, where sectors with negative externalities or with smaller learning spillovers are more heavily taxed. We argue that RER policies must be complemented by traditional industrial policies that increase the elasticity of the aggregate supply to the RER. We also discuss the challenges and trade-offs associated with RER policies, and we describe a variety of instruments that can be used for their implementation.

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1. Introduction

There are two central and interconnected issues in the macroeconomic literature on emerging economies in recent decades that relate to the links between the balance of payments and macro stability and growth: (i) the role that the exchange rate plays in facilitating or hindering economic diversification; and (ii) the extent to which the exchange rate regime and capital account management help manage cyclical swings in external financing, and open or limit the space for counter-cyclical macroeconomic policies. Both highlight the importance of exchange rate policies in open economies, alongside monetary and fiscal policies, but also the

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specific and somewhat contradictory links between exchange rate and monetary policies in emerging economies subject to strong boom-bust cycles in external financing.

The first of these issues underscores the central role that economic diversification plays in the long-term growth of emerging and developing countries (Ocampo, Rada and Taylor, 2009; Rodrik, 2007 and 2013; Stiglitz and Greenwald, 2014). In this view, scaling up toward activities with higher technological contents is the key to dynamic growth. These new activities can be found in natural resources, but are most commonly associated with the development of higher-tech manufacturing and modern services. The East Asian experiences, first of the Newly Industrializing Countries and most recently of China, are underscored as success stories of such diversification. This contrasts with the difficulty faced by natural-resource dependent economies, including South Africa and South American countries, in diversifying their production and export structures, and even the de-industrialization that several of them have faced.⁵

If the government could identify the learning spillovers associated with each type of activity and if it could use subsidies and lump-sum taxes to finance the subsidies, then there would be a set of transfers that would lead to a first best policy response. In this case real exchange rate policies would be second best. But if this is not possible (either because it is too difficult to identify sectors, or there are severe political economy problems or risks of rent seeking that impede an efficient allocation of subsidies, or there are international regulations that impede the implementation of subsidies in the first place), then there is a key role for real exchange rate policies—a role that has been enhanced by the deeper integration of the economies into global trade and the trade liberalization processes that have accompanied such integration.

A competitive exchange rate is crucial for new sectors, as “infant industries” must go through a learning process in order to be competitive (and especially so given strictures that have been imposed by the WTO on direct subsidies—see Stiglitz and Greenwald, 2014), but also for the generation of the backward and forward linkages of existing economic activities in the old

⁵ Note that changes in technology and the structure of the global economy mean that the pattern of growth for countries going forward may have to be markedly different from those that were successful in the past. Global employment in manufacturing is on the decrease, and those countries seeking to increase industrial employment will face increasing competition for a diminishing number of jobs. Moreover, there is likely to be some onshoring, with robotization. See Stiglitz and Greenwald (2014).

Hirschmanite sense. This implies that the exchange rate operates as a type of industrial policy⁶. This observation is backed up now by a growing literature that shows that long-term growth in developing countries is positively associated with the capacity to guarantee a competitive exchange rate (Rodrik, 2008; Rapetti, Skott and Razmi, 2012; Razmi, Rapetti and Skott, 2012; Rapetti, 2013; and for a review of the literature, Frenkel and Rapetti, 2014; Damill, Frenkel, and Rapetti, 2014; Missio, Jaime, Brito, and Oreiro, 2015). Empirical research also shows that exchange rate intervention is effective in dampening the effects of external financial shocks on the exchange rate (Blanchard, Adler, and de Carvalho Filho, 2015), and does affect the real exchange rate in the short run (Levy Yeyati and Sturzenegger, 2007; Levy Yeyati, Sturzenegger, and Gluzmann, 2013).

The second issue—the management of cyclical swings in capital flows—emphasizes the importance of counter-cyclical macroeconomic policies for long-term growth. The essential problem in this regard is that capital flows, like finance in general, are pro-cyclical. In commodity-exporting economies, this means, moreover, that capital flows reinforce rather than mitigate the commodity price cycle. There is overwhelming evidence that capital flows to emerging and developing countries are pro-cyclical and have become one of the major determinants—and in many cases *the* major determinant—of business cycles in emerging economies. This was well known before the global financial crisis (see, for example, Prasad *et al.*, 2003; and Ocampo, Spiegel and Stiglitz, 2008), but has been reinforced by the effects of the September 2008 Lehman shock, the effects of developed countries’ expansionary monetary policies on capital flows toward emerging economies, and the more recent swings associated with the announcement and initial tapering of U.S. expansionary monetary policy, the commodity price collapse and the turbulence in Chinese stock markets.

This paper discusses the role of exchange rate policies for economic development and the policy instruments for implementing them. It describes the advantages associated with keeping stable and competitive real exchange rates (SCRER), as well as the tensions in their implementation. Section 2 analyzes the usefulness of SCRER policies as a vehicle for economic

⁶ It should be emphasized that modern industrial policy is not just concerned with expanding the industrial sector. It entails any policy directed at affecting the sector composition of the economy or the choice of technology. Modern industrial policies can be directed not only at promoting growth, but increasing employment, reducing inequality, promoting the environment, or any other societal objective. See Greenwald and Stiglitz (2014a, 2014b).

development in economies with low diversification. It also stresses how those policies must be complemented by other interventions that increase the elasticity of the aggregate supply to the real exchange rate policies, and discusses the trade-offs for the society in terms of present versus future consumption associated with their implementation. Section 3 describes the alternative instruments that can be used for achieving a SCRER, emphasizing the advantages and disadvantages of each of them. Section 4 analyzes the challenges that SCRER policies face; it focuses on the need of coordination of different macroeconomic policies, and on the challenges that identification of economic trends pose for implementing SCRER that can be sustained over time. Section 5 provides conclusions.

2. Real Exchange Rate policies for Economic Development

Many of the developing economies, especially in Africa and South America, are highly dependent on agricultural as well as non-renewable natural resource exports (fuels and minerals). The abundance of natural resources, instead of increasing standards of living, has led to noncompetitive exchange rates that strangled the development of the tradable non-natural resource sectors, leading to structures of production with low diversification. The lack of diversification, in turn, has aggravated the problems of dependence on the terms of trade, leading to high macroeconomic volatility and vulnerability. This overall failure is known as the resource curse.⁷

There are policies that could effectively attack the macroeconomic problems implied by the macroeconomic volatility associated with those structures of production, such as stabilization funds and the counter-cyclical macroeconomic policies supported by active interventions in foreign capital markets and capital account management to which we refer below (Ocampo, 2008). Nevertheless, those policies are not sufficient to attack two more fundamental problems:

⁷ There are, of course, other dimensions of the resource curse, e.g. related to rent-seeking. Some of the excess volatility observed in resource dependent countries is related to the highly pro-cyclical nature of capital flows, noted earlier. See Humphreys, Sachs, and Stiglitz (2007).

the low labor requirements of those structures of production, and the limited learning spillovers associated with those economic activities (Stiglitz and Greenwald, 2014).⁸

The combination of exchange rate policies with other types of industrial policies may transform the comparative advantage of economies, with positive effects on economic development. Properly designed interventions may allow for the development of the sectors that are more conducive to learning –and hence lead societies to create more and better “social resources” and to use them more efficiently in the long-term—and that thus do a better job at incorporating into the economic system the most precious resource of the society: its population.

This section describes the importance of exchange rate policies for achieving those goals. It analyzes the characteristics that those policies should contain, and investigates how in specific structures of production those policies must be complemented by other active interventions (i.e. other types of industrial policies) that increase the elasticity of the aggregate supply to the real exchange rate. It also analyzes the trade-offs that the society faces with their implementation, as they may entail the sacrifice of present consumption in exchange for larger levels of future consumption.

2.1. Competitive real exchange rates

A competitive real exchange rate makes investment in the tradable sector more profitable. It may allow “infant sectors” to emerge and settle. In the absence of interventions, the size of sectors with large learning spillovers would be suboptimal, as the market would not internalize the positive effects of those sectors on the rest of the economy. Besides, when there are credit constraints, the *within*-sector⁹ learning spillovers—i.e., the benefits that a learning process would imply for the same sector in the future—will also be underexploited. Interventions that give these sectors an advantage over the conditions that the free market solution would provide constitute a (at least partial) correction of externalities and other market failures.

⁸ It should be emphasized that while, historically, linkages between natural resource sectors and the rest of the economy have often been limited, this is at least partly the result of not implementing adequate industrial policies. See, Greenwald and Stiglitz (2014a, b) and Jourdan (2014).

⁹ Or, for that matter, within-firm learning potentials.

These types of benefits are important for all economies, as these pervasive externalities and market failures are always present no matter the stage of development; but they are particularly important for developing economies, where there is more to learn and where credit constraints may be more binding.¹⁰ Exchange rate policies, then, would be a type of industrial policy that would especially benefit economies with more infant sectors.¹¹

At least four caveats must be made in relation to these propositions. The first one refers to the potential need for complementing real exchange rate policies with other traditional industrial policies. The second one refers to the fallacy of composition that would arise if many countries were following the same exchange rate policies at the same time. The third one refers to the challenge of channeling the benefits of exchange rate policies to the right sectors, i.e. those with larger positive externalities. The fourth one refers to the trade-offs that the implementation of these policies imposes on societies. The rest of this subsection analyzes these issues.

The complementarity between the exchange rate and industrial policies

A competitive exchange rate can be viewed as a type of industrial policy that can partially substitute for other traditional industrial policies¹²; however, under some circumstances, it must also be complemented by the implementation of those other policies.

Given the complex political economy that may be associated with appropriate management of active industrial policies, and the rent seeking that has sometimes characterized these policies in the past, many analysts see competitive exchange rates as the right approach for industrial policies, as opposed to the approach that consists in what has come to be called “picking winners”. But industrial policies should not be viewed as an exercise of picking winners. Rather, they should be an exercise in correcting market failures, in order to create social

¹⁰ This is especially so because of the predominance of SMEs in such economies.

¹¹ Greenwald and Stiglitz (2006) refer to policies promoting development in such economies as *infant economy* policies (as opposed to *infant industry* policies).

¹² But, of course, it is far more than an industrial policy.

capabilities and exploit them optimally over time—i.e., in “creating” rather than “picking” winners.

Indeed, competitive exchange rates would not constitute a sufficient policy for correcting those failures if other conditions that are also necessary for expanding the sectors with larger learning spillovers were not present. If the non-natural resources tradable sectors that these policies intend to expand do not have the other necessary conditions to emerge (for instance, access to technology and credit), the elasticity of aggregate supply to the real exchange rate will be low—a situation that may explain the lack of success of exchange rate policies in some experiences, and particularly why sometimes large devaluations are not associated with larger rates of output growth.

It is then crucial to create those conditions. Other, more traditional industrial policies may be the right vehicles for creating them. One of those traditional policies is the provision of credit for the non-resource sectors. Even in advanced countries, credit flows to SMEs are constrained, which is why many have public agencies (such as the US Small Business Administration) designed to facilitate the flow of credit to such firms. (And, of course, private lenders will put no value on the learning spillovers.) Regulatory policies can also be used to influence the allocation of credit (both positively—like the US Community Reinvestment Act requirements—and negatively, restricting the flow of credit to real estate speculation). Also, when political economy problems are not too intense, the direct allocation of funds by the government through national development banks may be a superior alternative than letting the market do the job of selecting the borrowers. Many countries have built up successful development banks.

Investments in infrastructure, education and R&D to enhance the competitiveness of the learning sectors are other traditional policies that could complement real exchange rate policies. Investments in human capital are especially profitable when the skills composition of the labor force is not well tuned for developing the infant sectors. In those situations, re-training the labor force must be an essential element of the integral development plan.

The fallacy of composition

There may be negative externalities of an active exchange rate policy and the variations in the current account that it generates on other countries, which may be particularly harmful if the country adopting such a policy is a large player in world trade.¹³ Also, if many emerging and developing countries adopted these policies, the joint effect would be more limited than if fewer economies did so, and there could be fallacy of composition effects that contribute to the generation of global imbalances.

Channeling the benefits of competitive RER to the “right” sectors

Economies with strong competitive advantages in natural resources face particularly difficult challenges in following the recommendation of adopting competitive exchange rate policies. This is truer if traditional export sectors benefit from high commodity prices, such as those experienced during the super-cycle of commodity prices that recently came to an end. Furthermore, although competitive and stable exchange rate policies can help to overcome the uncertainties and fixed costs that characterize the creation of new sectors of production and associated learning processes, they also benefit traditional export sectors, including natural resource-intensive sectors, and generate additional incentives to invest in them¹⁴. This is another reason why exchange rate policy *alone* may fail to encourage diversification.

In the absence of interventions, the benefits of commodity booms would be concentrated on the resource tradable sector, with limited benefits to non-resource sector exports and import competing sectors (indeed, when commodity booms lead to exchange rate appreciation, these sectors may be disadvantaged). This is why raising taxes on traditional commodity production (including through export taxes) to capture part of the commodity price windfall should be part of the policy package under these circumstances. These interventions would generate the capacity for distributing the benefits of the boom to the rest of the economy, and would create *de*

¹³ China has been traditionally accused of generating such negative externalities. But this is probably truer in the past than the present, given the significant long-term real appreciation that the Renminbi has experienced, particularly if measured using unit labor costs.

¹⁴ It is not just that the more competitive exchange rate increases the marginal return to investments in these sectors. In the presence of imperfect capital markets, the additional revenues may not flow easily to other sectors.

facto a system of *multiple effective exchange rates* that could make exports in the non-resource sector competitive.

The proposition is general: sectors with negative externalities or with smaller learning spillovers should be more heavily taxed. This tax policy, besides creating the incentives for expanding the “desirable” sectors, would at the same time contribute to generating the revenues for running active industrial policies that increase the elasticity of output to the real exchange rate policy.

Sideway Externalities

The strong static comparative advantage of the commodity sector also implies that industrial policies should particularly aim at exploiting the upstream, downstream, and horizontal linkages, including the linkages that might be associated with processing and resource extraction itself. For this type of an economy, the exploration and development of linkages with activities that have larger learning spillovers can be the basis of an effective industrial policy, one that enhances the capabilities of both individuals and firms.¹⁵

The associated trade-offs

A more “undervalued” RER means higher prices of tradable goods and services in terms of the domestic currency. Therefore, following a policy of competitive RER is associated with lower real wages in the present, with the objective of achieving higher real wages in the future. The magnitude of these effects depends on the composition of the consumption basket, and would tend to be stronger the larger the share of tradables in that basket (a basket that is of course endogenous). These trade-offs are also associated with distributive effects: not all the sectors of the society pay the same “price” in the present for achieving larger economic growth in steady

¹⁵ For further elaboration, see the various chapters in Stiglitz, Lin, and Patel (2014), especially Jordan (2014) and Greenwald and Stiglitz (2014b).

state—and it may not be clear for the different sectors of the society who will benefit from the increases in economic growth at the time they are achieved.

Therefore, the implementation of competitive RER policies requires social coordination that in many occasions is difficult to achieve—especially so when the sectors that would lose purchasing power in the present believe that they will not share the potentially larger purchasing power of the aggregate economy in the future.

2.2. Stable real exchange rates

Policies should not only aim at guaranteeing a competitive exchange rate but also a *stable* one. The reason is clear: real exchange rate instability is a major source of uncertainty for the production of tradable (export and import-competing) goods and services, and therefore discourages investment in these sectors. This is so because firms are risk averse, and so care not just about the average exchange rate, but also about its volatility. A simple way to specify this view is that investment depends not only on the expected *average* exchange rate but also on the *strongest* (or most appreciated) exchange rate¹⁶ that is expected during the relevant horizon of the investment decision, which determines the risk of bankruptcy of firms producing the associated goods and services. Furthermore, exchange rate instability increases the volatility of cash flows for firms in these sectors, the main source of funding for small and medium firms in imperfect capital markets, further deterring investments.¹⁷

An additional adverse effect of exchange rate instability is associated with the hysteresis accompanying dynamic economies of scale (e.g., if productivity tomorrow depends on production today). Under these circumstances, exchange rate appreciation during booms can generate permanent losses in the production structure, and therefore, adverse effects on long-term growth—an effect neatly captured in a classic paper by Krugman (1987).

¹⁶ This is the highest exchange rate in the U.S. usage (which refers to the value of a unit of domestic in terms of other currencies), but it is the lowest as typically used in developing countries (the domestic value of one dollar). This is why the terms “strongest” or “most appreciated” exchange rate are less ambiguous.

¹⁷ It is now well established that SMEs are especially cash constrained, and that cash flows are the major source of funding for their investments. This is true even in advanced countries with well-developed capital markets.

Short run movements in the exchange rate today are largely related to changes in capital flows (and would be even more so in the absence of government intervention.) While we focus in this section on the exchange rate effects, we need to recognize that these changes in capital flows have far more reaching effects than just the change in exchange rates; for (in the absence of fully countervailing measures by monetary authorities) they affect the flows of funds to different sectors of the economy, and thus, they affect the structure of the economy. (Surges in capital flows are thus often associated with real estate bubbles.)

Recent shocks in global financial markets have once again demonstrated that the cyclical supply of finance toward emerging economies is largely driven by monetary policy and portfolio decisions in industrial countries, related in turn to the response of banks and portfolio investors to incentives created by monetary and financial events generated in developed countries and, particularly in the U.S. These responses are called the “search for yield” and the “flight to safety”, typical of different phases of financial cycles. In emerging economies, the domestic financial risks are made more complex by the currency mismatches that they generate in domestic economic agents borrowing abroad,¹⁸ as well as the pro-cyclical response to exchange rate and interest rate movements by portfolio foreign investors in the domestic currency bond and equity markets of emerging economies, including through carry trade.

The cyclical behavior that characterizes capital flows goes beyond volatility of short-term flows (which in turn contribute to volatility in exchange rates)¹⁹. Even more challenging in policy terms are the *medium-term* cycles in the availability and costs of financing. Since the mid-1970s, emerging economies have experienced three full medium-term cycles of external financing of emerging economies—mid-1970s to late-1980s, 1990 to 2002, and 2003 to 2009—and may be coming to the end of a fourth one, which started in late 2009 and has been followed by several episodes of capital outflows since the initial announcements of U.S. monetary tapering in May 2013, which became more severe since the collapse of commodity prices in 2014 and the turbulence of Chinese stock markets since mid-2015. The major problem with these

¹⁸ Especially in the absence of adequate regulation.

¹⁹ The large and growing literature on macro-economic externalities (Jeanne and Korinek (2010), Korinek (2010, 2011)) emphasizes that because of these externalities, there is *no* presumption that market determined exchange rates have optimality properties. They provide a theoretical rationale for the capital account management interventions described in this paper.

medium-term swings is their strong effect on *all* major macroeconomic variables: exchange rates, interest rates, domestic credit, asset prices and, through all of them, on the balance of payment and economic activity.

A major source of concern of the recent literature and policy debates are the macroeconomic and financial stability risks generated by swings in both the balance of payment and domestic finance that are associated with these cycles. Since we are concerned here with the exchange rate and the capital account, we will concentrate on the balance of payments effects—although these risks have other implications of major concern for societies, such as perverse distributive effects.

The increase in external liabilities associated with capital account booms are sometimes offset by an increase in foreign assets. Even in these cases, the currency mismatch between the assets and liabilities generates risks. However, the major problem is when capital account booms are “absorbed” by growing current account deficits, thus generating a deterioration of external balance sheets. It is now generally agreed that large current account deficits are a major source of financial risks when external financial conditions deteriorate. This enhances the probability and potential costs of balance of payments crises. Furthermore, the associated exchange rate correction that then takes place generates massive wealth losses associated with currency mismatches in domestic portfolios, which may lead to a domestic financial crisis. This is reinforced by the possible bust of the domestic credit and asset price bubbles generated during the external financing boom.²⁰

Finally, pro-cyclical capital flows limit the space for counter-cyclical macroeconomic policies and, more generally, exacerbate major policy trade-offs. For example, exchange rate flexibility does generate some degree of monetary policy autonomy. However, by attracting additional capital flows, the use of counter-cyclical monetary policies would only exacerbate appreciation pressures—in a sense just displacing the effects of pro-cyclical capital flows to the exchange rate. It is important to realize that monetary policy itself has sectorial impacts; the reliance on monetary policy for managing volatility in capital flows disadvantages sectors that

²⁰ Some of these adverse effects might be mitigated by the capital account management techniques described below, which are part of appropriately designed macroprudential regulations.

are particularly sensitive to the exchange rate and interest rate. Even then, monetary policy may be relatively ineffective in countervailing the inflationary impact of capital surges: the decrease in activity in the interest rate and exchange rate sensitive sectors can be more than offset by the stimulative effect of the capital flows induced by the higher interest rates.

An alternative to reducing the expansionary pressures generated by capital inflows is to adopt a contractionary fiscal policy. But this makes fiscal policy hostage to capital account volatility.

There is, therefore a strong case for intervening directly in the source of the cyclical swings (i.e., on capital flows) or in the exchange rate market, through counter-cyclical accumulation of foreign exchange reserves. These are the issues to which we now turn.

3. Complementary macroeconomic policy instruments: capital account regulations

Capital account regulations (CARs) play a dual role: they serve both as a *macroeconomic* policy tool and as a *financial stability* tool (Ocampo, 2015). As a macroeconomic policy tool, they provide larger room for counter-cyclical monetary policies. During booms, they increase the space to undertake contractionary monetary policy while avoiding the exchange rate appreciation pressures that such monetary policy can generate. By mitigating exchange rate appreciation, they also reduce the risks that rising current account deficits will generate a future balance of payments crisis. In turn, during crises, they can create some room for expansionary monetary policies while containing capital flight and excessive exchange rate depreciation, and the effects of the latter on domestic inflation. The increase in capacity for counter-cyclical monetary policies reduces the burden on fiscal policies throughout the business cycle. (In addition, CARs may have a direct macro-economic effect, by affecting the flow of funds to certain sectors.)

On the other hand, viewed as a financial stability tool, CARs recognize the fact that the reversibility of capital flows varies significantly according to the nature of capital flows: foreign direct investment is more stable than portfolio and debt flows and, among the latter, short-term

debt flows are particularly volatile.²¹ So, as a financial stability tool, CARs aim at moderating the build-up of debts, and particularly short-term debts, during booms as well as reversible portfolio flows. These interventions reduce the intensity of the capital account cycle.

CARs can also be justified as a way of avoiding the negative externalities of volatile capital flows on recipient countries. These externalities result from the fact that individual investors and borrowers do not take into account or ignore the effects of their financial decisions on the level of financial stability in a particular nation, including on the exchange rate and other macro-economic variables. Such market failures call for a Pigouvian tax—here, taxes on cross-border financial activities and other regulations (Korinek, 2011).

3.1. Forms of Capital Account Regulations

CARs can be either administrative (quantitative) or price-based, but there are more complex typologies (see, for example, IMF 2011). They have also been called “capital flow management measures” (IMF, 2011) and “capital management techniques” (Epstein *et al.*, 2003). Administrative regulations include ceilings or prohibitions or ceilings on certain transactions, minimum stay periods, restrictions on foreign investors taking positions in domestic securities or rules that only allow certain agents (residents and corporates) to undertake certain transactions. In turn, price-based regulations include unremunerated reserve requirements on capital inflows (URRs) or tax provisions applying to foreign-currency liabilities (see, on the latter, Stiglitz and Bhattacharya 2000).

All of them belong to the family of what have come to be called “macroprudential regulations”. This concept was proposed before the global financial crisis,²² but has only received widespread acceptance in recent years, including in the IMF’s “institutional view” of capital account management. In fact, CARs should be seen as part of a continuum, which goes from regulation on financial transactions of domestic residents in the domestic currency

²¹ The classic treatment of the riskiness of short-term capital is Rodrik and Velasco (2000).

²² See, for example, the concept of “counter-cyclical prudential regulations” in Ocampo (2003), as well as the work of the Bank for International Settlements on what they already termed the “macroprudential perspective”.

(traditional prudential regulation), to those of domestic residents transacting in foreign currency, to those involving domestic agents' transactions with foreign residents.

As components of the broader family or macroprudential regulations, those that focus directly on the capital account can be partly substituted by domestic prudential regulations. For example, a good fairly generalized regulatory practice is managing the net foreign exchange exposure of domestic financial institutions. This may entail forbidding banks and other domestic financial intermediaries from holding net liability positions in foreign currency, or using differential reserve requirements for liabilities of the domestic banks in domestic vs. foreign currencies. These regulations can be combined with oversight of the currency exposure of the firms to which the banks lend. One disadvantage of replacing purely domestic regulations for those that directly affect capital flows is that they do not encompass direct borrowing abroad by non-financial agents. A specific advantage of CARs is that they aim at the direct source of financial volatility.

3.2. Evidence on the effectiveness of Capital Account Regulations

Most of the literature on the effectiveness of CARs comes from the analysis of individual countries or comparative experiences of countries that apply them.²³ However, this type of analyses does not generally include comparison with countries facing the same external conditions but not using regulations. Multi-country studies facilitate, in principle, such comparisons.

The strongest consensus in the literature relates to the improvement in the quality of capital inflows generated by CARs, by lengthening the maturity of external debt obligations. There is also a fairly broad agreement in the capacity of regulations to increase monetary policy independence by partly delinking the interest and exchange rate effects of capital flows, thus allowing countries greater scope to increase domestic interest rates during booms and avoid raising them during crises.

²³ See, among others, several papers by the IMF (2011) and IMF experts (Ariyoshi *et al.* 2000; Ostry *et al.* 2010, 2011 and 2012; the literature reviews of Magud and Reinhart (2007), Magud, Reinhart and Rogoff (2011), Ocampo (2008) and Ocampo and Erten (2014); and the broad review of the debates on CARs in Gallagher (2014).

In contrast, there is no agreement on whether CARs can be used to affect overall capital inflows and exchange rates. Exchange rate effects are generally found to be statistically insignificant or at least temporary. The same is true of overall capital flows, implying that these regulations are “speed bumps”²⁴ rather than permanent restrictions²⁵. This implies that it may be necessary to modify regulations to respond to ways private agents learn to circumvent regulations. However, speed bumps do make direct contributions to financial stability. Historically, financial crises have been associated with manias, typically including the rapid expansion of credit that in turn led to the rapid growth of prices of some type of assets (Kindleberger and Aliber, 2011).²⁶ Speed bumps may effectively discourage the creation of bubbles.

These effects may depend on the nature and strength of the regulations. In particular, quantitative regulations may have stronger effects (see below). Also, in a comparative study of the effects of CARs on inflows in Chile, Colombia and Malaysia in the 1990s, Ocampo and Palma (2008) concluded that the harsher 1994 Malaysian regulations had the strongest effect and, in turn, those of Colombia were more effective than those of Chile because the tax equivalent of the unremunerated reserve requirement (URR) was larger.²⁷ Using two instruments simultaneously may also enhance their effectiveness, as shown in the analysis by Rincón and Toro (2010) which illustrates the stronger effects of central bank interventions in foreign exchange markets and URRs on exchange rates when these interventions were adopted simultaneously.

CARs also have real effects. According to IMF research, countries that had CARs in place before the global financial crisis were able to mitigate the contraction of GDP during the crisis (Ostry et al., 2012). This was confirmed by Erten and Ocampo (2013), who found that CARs not only helped countries avoid a strong impact of the crisis but also overheating during the recovery, indicating that they are, overall, an effective counter-cyclical policy instrument.

²⁴ This is the term used by Bhattacharya (1997), Stiglitz (1999) and Ocampo and Palma (2008), among others.

²⁵ Some CARs do, however, affect the relative attractiveness to, say, foreign exchange exposures, and thus should be expected to have a long run effect.

²⁶ Prolonged manias in presumably stable environments have also been associated with more severe crises (Gluzmann, Guzman, and Howitt, 2014; Guzman and Howitt, 2015).

²⁷ Similarly, the strong tax on outflows introduced by Malaysia in 1998 is generally considered to have been very effective (Kaplan and Rodrik, 2002).

The literature has also discussed the advantages and disadvantages of several forms of regulations: regulating inflows versus outflows, administrative vs. price-based, and temporary versus permanent interventions. On the first of these issues, there is a preference for regulating inflows. However, the empirical evidence, including in past IMF research, indicate that regulations of outflows are more effective than those on inflows.²⁸

There is also a preference for price-based versus administrative regulations, as they are more market friendly and less susceptible to political economy failures (rent seeking and corruption). But again, the evidence in the literature, including past IMF research, is that administrative regulations are generally more effective. Theory shows that in general, when information is imperfect and contracts are incomplete, it is optimal to use a set of controls that contain both price regulations to affect incentives and quantity regulation to affect constraints (Weitzman, 1974; Dasgupta and Stiglitz, 1977). In practice, simple administrative regulations, such as prohibition for some financial agents to undertake certain transactions, are widely used in domestic prudential regulation, with no stigma associated with them.

In relation to temporary versus permanent regulation, the crucial issue is whether countries have the institutions in place when they needed, rather than having to improvise them, risking their ineffectiveness. This is closely related to the associated learning process as to how to use them, and the capacity to design rules that incorporate the most important adjustments required through the business cycle. In both regards, having permanent regulatory systems in place that can be used in a counter-cyclical way—including temporarily phasing out the regulations when there are no balance of payments pressures—is better than improvising institutions to manage either booms or crises.

On the other hand, the IMF's and many analysts' view is that regulations should not discriminate between residents and non-residents. However, residents and non-residents do have a significant difference in their demands for assets denominated in different currencies and, in particular, non-residents would tend to demand less domestic currency and assets denominated in

²⁸ See the older research by the IMF (Ariyoshi *et al.* 2000) and Erten and Ocampo (2013).

that currency, and possibly in a more unstable way.²⁹ For that reason, it may not be possible to avoid discrimination, because even regulations that focus on currencies *de facto* discriminate between residents and non-residents.

Finally, there is also a broad-based agreement that different types of flows should be subject to different types of regulation. CARs should aim at the most volatile flows, which are generally bank lending and portfolio flows (particularly debt portfolio flows). In contrast, trade financing and foreign direct investment (FDI) should generally be exempted from CARs. However, since FDI has increasingly taken the form of lending by the headquarters of multinational firms to their subsidiaries, the distinction of debt flows from direct investment is not clear-cut. Also, in project financing, equity investments are frequently financed by bond issues in international markets, again mixing equity and debt flows. Exemptions on FDI may thus become significant loopholes in the design of regulations. Authorities should, therefore, think of applying CARs to some forms of FDI, at least requiring minimum-stay periods to guarantee that FDI is in fact a long-term flow.

4. Complementary policy interventions in foreign exchange markets

It can be argued that the basic disadvantage of capital market regulations is that they *segment* domestic from international markets. It can be argued, however, that this recognizes the reality that markets are already segmented. In fact, the basic flaw of capital account liberalization is that it does not recognize the implications of this fact. In any case, the most common rationale for opening the capital account is that countries positively value being integrated into global financial markets. This preference, plus the generally negative view on regulating capital flows that prevailed before the global financial crisis, is why countries generally prefer to intervene in foreign exchange markets.

Such interventions have indeed become a major rule in many emerging and developing countries, particularly after the emerging countries' crisis that started in East Asia in 1997. A

²⁹ See Stiglitz and Greenwald (2014) for a discussion of why such greater instability might be expected, given asymmetries of information.

major result of this is that, in contrast to the mainstream view that prevailed in the 1990s, according to which only polar regimes were stable—hard pegs or freely floating exchange rates—the dominant exchange rate regime in emerging and developing countries has become intermediate regimes, in particular *managed* exchange rate flexibility. In fact, and in contrast to the mainstream views a decade ago, IMF research now shows that managed floats are significantly less prone to crises (Ghosh, Ostry and Qureshi, 2014). This indicates that the pragmatic choice of many emerging and developing countries has been a correct one.

Interventions in foreign exchange market among countries differ, however, in terms of the magnitude and symmetry of their interventions through the business cycle. For example, among the five major Latin American countries with managed floats, Peru is the country that most massively intervenes in foreign exchange markets, followed by Chile (if we include the copper stabilization funds as a complement to foreign exchange reserves³⁰); Brazil falls in an intermediate position, and Colombia and Mexico have the most moderate levels of intervention (though Mexico has intervened more heavily since the global financial crisis). The unsurprising result is that Peru has the most stable real exchange rate over the past decade (Ocampo and Malagón, 2015). Obviously, the magnitude of the necessary interventions depends on the capital account regime as well as the global conditions that determine the size and volatility of capital flows.

A cursory look at trends in foreign exchange reserves in emerging economies shows also that interventions in foreign exchange markets tend to be asymmetrical. In particular, the massive accumulation of reserves prior to the global financial crisis was followed by a rather moderate use of such reserves during the peak of the crisis—the year or so after the collapse of Lehman Brothers. One rationale is that there is an inherent asymmetry in the fact that emerging countries' central banks issue domestic currency but not dollars (or euros). Since the demand for the domestic currency increases during booms, reserve accumulation is one way of supplying the additional money; beyond the point that central banks view it as appropriate to issue domestic

³⁰ We should distinguish interventions directed at offsetting volatile capital flows from those directed at weakening the exchange rate over an extended period of time from what it otherwise would be. Managing fluctuations in foreign exchange earnings associated with commodity export price cycles also aim to smooth real exchange rates, and in this sense are complementary with those that try to avoid real exchange fluctuations associated with capital account volatility. In this sense, stabilization funds, such as those used by Chile to accumulate funds during copper price booms, play a complementary role to foreign exchange reserves.

currency, they can also sterilize the reserve accumulation. In contrast, the degrees of freedom that they have when foreign reserves dwindle are more limited, and the reduction in reserves may itself generate strong adverse speculative pressures, rising risk premiums and capital flight. So, given the asymmetries emerging and developing countries face, the asymmetrical management of foreign exchange reserves is a rational response of authorities.

In any case, central bank preferences differ significantly in this regard. Analyzing five large Asian economies over the past decade, Sengupta and Sen Gupta (2014) find that all countries accumulated reserves during capital account surges but they allowed them to fall during episodes of sudden stop in external financing in a very diverse way. India and Korea reduced their reserves during such episodes but Indonesia and Thailand did not, while Malaysia's response depended on the specific episode. This reveals, according to the authors' analysis, the stronger relative preference by Indonesia and Thailand for exchange rate stability as a policy objective relative to monetary independence.

If the basic problem of CARs is that they segment capital markets, the major disadvantage of reserve accumulation is that it is costly. As it is well known, the basic problem in this regard is that reserves are invested in very low-yield safe assets; so, if reserves are accumulated to avoid the appreciation of the exchange rate in the face of booming and higher yield private capital flows, the cost can be sizable. If reserve accumulation is sterilized, there are also domestic costs associated with such sterilization. As reserves have become sizable in most countries, these costs have increased (see, for example, the estimates of Gallagher and Shrestha, 2012).

However, there are circumstances in which sterilization costs can be compensated by the returns on accumulated foreign exchange reserves. This was the case of Argentina during 2003-2008, a period in which that country followed a policy of stable and competitive real exchange rate (and also of multiple effective exchange rates, determined by a structure of differential taxes on exports). To reach the real exchange rate "targets", the Central Bank followed a managed floating regime within a monetary framework of targeting a monetary aggregate. To achieve the monetary targets, the Central Bank had to sterilize part of the increase in liquidity generated by its intervention in foreign exchange markets through the issuing of short and medium term

securities. As the interest payments on short and medium term securities were not greater than the yields obtained from international reserves, sterilized foreign interventions were not costly in net terms.

Furthermore, while countries have traditionally held low yielding assets in their reserves, they have increasingly recycled some of the reserves into higher yielding asset purchases, generating significant returns. In general, however, when for one reason or another, a country is unable to manage its reserves to yield significant return, a more active use of CARs may be seen as a less costly way of intervention.

Overall, what this analysis indicates is that best practice in open emerging economies subject to boom-bust cycles in external financing is the complementary use of traditional macroeconomic policies with interventions in foreign exchange markets and capital account regulations.

These interventions should be seen, of course, as a complement and not a substitute for counter-cyclical macroeconomic policies, and of industrial policy. They should also not be seen as a sort of “interventions of last resort” once other macroeconomic policies have been exhausted, but rather as part of the normal counter-cyclical policy package.

5. Additional policy coordination challenges with the implementation of SCRER policies

The effectiveness of SCRER policies depends on the capacity of being maintained at least until the infant sectors become competitive and the learning externalities that those policies aim to foster are built up.

One of the challenges for using a SCRER as industrial policy is to avoid a large pass-through from nominal exchange rate depreciation to prices. There is evidence that countries with more volatile nominal exchange rates have higher pass-through elasticities (Campa and

Goldberg, 2005).³¹ A corollary from this relationship is that a policy that targets nominal exchange rate stability would also decrease the pass-through to prices, making the SCRER policy more sustainable.

Generally, pass-through elasticities will depend on the characteristics of the market structure. Under the law of one price, in highly competitive markets there would be a perfect pass-through from movements in the exchange rate to domestic prices of tradable goods.³² But a less than infinity elasticity of substitution between domestic and foreign goods would decrease the pass-through elasticity. Consistently, empirical studies show that pass-through elasticities are larger when the economy is more open. The elasticities also depend on macroeconomic conditions: they are smaller in recessions than in booms (Goldfjan and da Costa Werlang, 2000).

The sustainability of SCRER requires coordination with fiscal and monetary policies, and importantly, it requires a proper identification of productivity trends. Macro policies should in this sense generate an essential enabling environment for industrial policies to be effective. Policies that encourage significant increases in consumption based on the expectation of future increases in productivity—perhaps as a consequence of the real exchange and other industrial policies—may fail dramatically if those expectations are not subsequently realized. If macro policies turn out to be over-expansionary ex-post, they may result in inflationary pressures that will severely damage the capacity for pursuing competitive *real* exchange rates. The recent case of Argentina is an indication of these risks: When the country followed a SCRER policy (2003-2008), the macroeconomic performance was successful. When that strategy stopped being followed (since 2010), economic performance was mediocre (Damill, Frenkel, and Rapetti, 2014).

Ultimately, the success of SCRER policies will depend on the capacity of being sustained at least until the infant sectors grow, and this capacity will in turn depend on the possibility of

³¹ The quoted study provides evidence only for OECD countries. This empirical finding is consistent with Devereux and Engel (2001) theory, in which a higher volatility of the exchange rate makes the choice of foreign currencies for transaction invoices more likely. Then, variations in the exchange rate would have a larger effect on prices.

³² Matters are somewhat more complicated than this discussion suggests. For instance, if the country purchases mostly machine goods from abroad, then a change in the exchange rate might not affect the short run marginal costs of production. If the country imports mostly food, the impact on manufactured goods will depend on the structure of the labor market and wage bargaining processes.

financing the complementary traditional industrial policies and of ensuring an economic structure associated with a low pass-through. Avoiding boom-go-bust situations is central for achieving those conditions.

6. Conclusions

There are a variety of historical experiences that support the claim that stable and competitive real exchange rate (SCRER) policies are good for economic development, as demonstrated by a number of Asian economies (Rodrik, 2008; Razmi et al., 2012), and more recently by Argentina during 2003-2008 (Damill, Frenkel, and Rapetti, 2014).

This paper has described the theoretical foundations for those policies. We should note that the main argument *against* such interventions—that they represent interference in the free functioning of markets, which, in the absence of such intervention would ensure efficiency—has been totally undermined by research over the past decades. In the absence of government intervention, markets are not in general either efficient or stable. Today, in fact, every government intervenes in the market, at the very least through the setting of interest rates (monetary policy). There is no such thing as a “pure” market equilibrium. Indeed, the market equilibrium is affected by virtually every regulation that affects the macro-economic equilibrium, including those that affect domestic savings and investment.

It is sometimes suggested that the market interventions we have described *distort* the economy, in a way that monetary policy does not. But the conduct of monetary policy (e.g., a reliance on interest rate adjustments) has *sectoral* consequences; it itself is “distortionary.” Today, it is recognized that monetary policy should not be confined to a single instrument—simply to the setting of short term interest rates—but requires that monetary and regulatory authorities use, in a coordinated way, the full panoply of instruments at their disposal, with an awareness of the full range of effects of such policies.³³

³³ See Greenwald and Stiglitz (2003) and Stiglitz (2014).

We argued that a SCRER sets (some of) the necessary conditions for increases in diversification of the tradable sector. But in order to incentivize the sectors with larger learning spillovers, other complementary conditions must be established. Particularly, the sectors with smaller learning spillovers must be taxed more heavily, in order to create a structure of shadow prices that reflects the true social benefits and costs. The revenues from that tax structure may serve the function of funding other traditional industrial policies that would increase the elasticity of the aggregate supply to real exchange rate policies, such as the provision of credit to the infant sectors, investments in infrastructure and R&D, and investments in education that allow for a reconversion of the composition of the labor force to one that is complementary of the pursued structure of production.

A variety of capital account regulations and foreign exchange market interventions can be used for achieving the goal of a SCRER. Those instruments may play a key role for achieving macroeconomic and financial stability. We believe that the question should not be *which* instrument to utilize. Rather, there should be a portfolio of instruments; direct interventions combined with capital account management techniques, and in the latter case, price as well as administrative interventions. We have argued that there has to be a *stable* and *competitive* exchange rate, and given the instability of global financial markets, this requires *flexible and sustained interventions*. And these interventions and instruments need to be used in combination with, and in coordination with, a range of other monetary, macro-economic and micro-instruments, including, most notably, industrial policies. Exchange rate management is both an instrument of industrial policy, and a policy that can enhance the power of other instruments.

Exchange rates are, of course, not ends in themselves—just as the market is not an end in itself. So too, there is no presumption that market determined exchange rates without government intervention have any optimality property. The policies that we have discussed in this paper are all means to an end—of creating an economy with sustained and shared prosperity.

References

Ariyoshi, Akira, Karl Habermeier, Bernard Laurens, Inci Ötker-Robe, Jorge Iván Canales-Kriljenko, and Andrei Kirilenko (2000), “Capital Controls: Country Experiences with

- Their Use and Liberalization”, *Occasional Paper No. 190*, Washington D.C.: International Monetary Fund.
- Bhattacharya, Amar (1997), “Private Capital flows to Developing Countries,” Washington, D.C.: World Bank.
- Blanchard, Olivier, Gustavo Adler, and Irineu de Carvalho Filho (2015), “Can Foreign Exchange Intervention Stem Exchange Rate Pressures from Global Capital Flow Shocks”, *IMF Working Paper* 15/159.
- Campa, Jose Manuel, and Linda S. Goldberg (2005), “Exchange rate pass-through into import prices,” *Review of Economics and Statistics* 87.4: 679-690.
- Damill, Mario, Roberto Frenkel, and Martin Rapetti (2014), “Macroeconomic Policies in Argentina 2002-2013,” *Comparative Economic Studies* (2015).
- Dasgupta, Partha, and Joseph Stiglitz (1977), "Tariffs vs. quotas as revenue raising devices under uncertainty," *The American Economic Review* 1977:975-981.
- Devereux, Michael B., and Charles Engel (2001), *Endogenous currency of price setting in a dynamic open economy model*, WP8559, National Bureau of Economic Research.
- Epstein, Gerald, Ilene Grabel, and K.S. Jomo (2003), “Capital Management Techniques in Developing Countries”, in Ariel Buirá (ed.), *Challenges to the World Bank and the IMF: Developing Country Perspectives*. London: Anthem Press, chapter 6.
- Erten, Bilge, and José Antonio Ocampo (2013), *Capital Account Regulations, Foreign Exchange Pressure, and Crisis Resilience*, Initiative Policy Dialogue Working Paper.
- Frenkel, Robert, and Martin Rapetti (2014), “The real exchange rate as a target of macroeconomic policy”, *Paper 74*, Buenos Aires: Iniciativa para la transparencia financiera, www.itf.org.ar
- Gallagher, Kevin (2014), *Ruling Capital: Emerging Markets and the Reregulation of Cross-Border Finance*, Ithaca: Cornell University Press.
- Gallagher, Kevin, and Elen Shrestha (2012), “The Social Cost of Self-Insurance: Financial Crisis, Reserve Accumulation, and Developing Countries”, *Global Policy*, 3,4:501-509.
- Goldfajn, Ilan, and Sergio Ribeiro da Costa Werlang (2000), *The pass-through from depreciation to inflation: a panel study*, Pontificia Universidade Católica de Rio de Janeiro, Departamento de Economía.
- Ghosh, Atish R., Jonathan David Ostry, and Mahvash Saeed Qureshi (2014), *Exchange Rate Management and Crisis Susceptibility: A Reassessment*. International Monetary Fund.
- Gluzmann, Pablo, Martin Guzman, and Peter Howitt (2014), “Stability of Expectations and Severity of Crises”. Paper Presented at the International Economic Association World Congress, Dead Sea, Jordan, 2014.
- Greenwald, Bruce, and Joseph E. Stiglitz (2006), “Helping infant economies grow: Foundations of trade policies for developing countries.” *The American Economic Review* (2006):141-146.

- Greenwald, B. and J. E. Stiglitz (2014a), “Industrial Policies, the Creation of a Learning Society, and Economic Development,” in *The Industrial Policy Revolution I: The Role of Government Beyond Ideology*, Joseph E. Stiglitz and Justin Yifu Lin (eds.), Houndmills, UK and New York: Palgrave Macmillan, pp. 43-71.
- Greenwald, B. and J. E. Stiglitz (2014b), “Learning and Industrial Policy: Implications for Africa,” in Joseph E. Stiglitz, Justin Yifu Lin, and Ebrahim Patel (eds.), *The Industrial Policy Revolution II: Africa in the 21st Century*, Houndmills, UK and New York: Palgrave Macmillan, pp. 25-29.
- Guzman, Martin and Peter Howitt (2015), “Learning, Expectations, and the Financial Instability Hypothesis”. In *Contemporary Issues in Macroeconomics: Lessons from the Crisis and Beyond*, edited by J.E. Stiglitz and M. Guzman, Chapter 6. Palgrave.
- IMF (International Monetary Fund) (2011), “Recent Experiences in Managing Capital Inflows: Cross-Cutting Themes and Possible Policy Framework”, *IMF Policy Paper*, 14 February.
- Jeanne, Olivier, and Anton Korinek. *Managing credit booms and busts: A Pigouvian taxation approach*. No. w16377. National Bureau of Economic Research, 2010.
- Jourdan, Paul (2014), “Toward a Resource-Based African Industrialization Strategy”, in Joseph E. Stiglitz, Justin Yifu Lin, and Ebrahim Patel (eds.), *The Industrial Policy Revolution II: Africa in the 21st Century*, Houndmills, UK and New York: Palgrave Macmillan, 2014.
- Kaplan, Ethan, and Dani Rodrik (2002), “Did the Malaysian Capital Controls Work?”, NBER Working Paper 8142.
- Kindleberger, Charles P., and Robert Z. Aliber (2011), *Manias, panics and crashes: a history of financial crises*. Palgrave Macmillan, 2011.
- Klein, Michael W. (2012), “Capital Controls: Gates and Walls,” *Brookings Panel on Economic Activity*, Fall.
- Korinek, Anton (2010) "Regulating capital flows to emerging markets: An externality view.", Mimeo.
- Korinek, Anton (2011), "The new economics of prudential capital controls: A research agenda." *IMF Economic Review* 59.3: 523-561.
- Krugman, Paul (1987), "The narrow moving band, the Dutch disease, and the competitive consequences of Mrs. Thatcher: Notes on trade in the presence of dynamic scale economies." *Journal of Development Economics* 27, No. 1: 41-55.
- Macartan Humphreys, Jeffrey Sachs and J. E. Stiglitz (eds.) (2007), *Escaping the Resource Curse*, New York: Columbia University Press.
- Levy-Yeyati, Eduardo, and Federico Sturzenegger (2007), "Fear of floating in reverse: exchange rate policy in the 2000s." In *LAMES-LACEA Annual Meetings*.
- Levy-Yeyati, Eduardo, Federico Sturzenegger, and Pablo Alfredo Gluzmann (2013), "Fear of Appreciation." *Journal of Development Economics* 101 (2013): 233-247.
- Magud, Nicolas E., and Carmen M. Reinhart (2007), “Capital Controls: An Evaluation.” In Sebastian Edwards (ed.), *Capital Controls and Capital Flows in Emerging Economies: Policies, Practices and Consequences*. Chicago: The University of Chicago Press, ch. 14.

- Magud, Nicolas E., Carmen M. Reinhart, and Kenneth S. Rogoff (2011) “Capital Controls: Myth and Reality—A Portfolio Balance Approach,” NBER Working Paper No. 16805.
- Missio, Fabricio Jose, Frederico Jayme Jr, Gustavo Britto, and José Luis Oreiro (2015), “Real Exchange Rate and Economic Growth: new Empirical Evidence”, *Metroeconomica*, forthcoming.
- Ocampo, José Antonio (2003), “Capital Account and Counter-Cyclical Prudential Regulation in Developing Countries”, in Ricardo Ffrench-Davis and Stephany Griffith-Jones (eds), *From Capital Surges to Drought: Seeking Stability for Emerging Markets*. London: Palgrave Macmillan.
- Ocampo, José Antonio (2008), “A Broad View of Macroeconomic Stability”, in Narcis Serra and Joseph E. Stiglitz (eds), *The Washington Consensus Reconsidered: Towards a New Global Governance*. New York: Oxford University Press, ch. 6.
- Ocampo, José Antonio (2015), “Capital Account Liberalization and Management”, *UNU-WIDER Working Paper* 2015/048, May.
- Ocampo, José Antonio, Codrina Rada, and Lance Taylor. *Growth and policy in developing countries: a structuralist approach*. Columbia University Press, 2009.
- Ocampo, José Antonio, and Gabriel Palma (2008), “The Role of Preventive Capital Account Regulations”, in José Antonio Ocampo and Joseph E. Stiglitz (eds.), *Capital Market Liberalization and Development*. New York: Oxford University Press, ch.7.
- Ocampo, José Antonio, Shari Spiegel, and Joseph E. Stiglitz (2008), “Capital Market Liberalization and Development”, in José Antonio Ocampo and Joseph E. Stiglitz (eds), *Capital Market Liberalization and Development*. New York: Oxford University Press.
- Ocampo, José Antonio, and Bilge Erten (2014), “Capital Account Regulations: Role, Effectiveness, and the IMF’s Institutional View”, in Luiz Carlos Bresser-Pereira, Jan Kregel and Leonardo Burlamaqui (eds.), *Financial Stability and Growth: Essays on Financial Regulation and New Developmentalism*, Milton Park: Routledge.
- Ocampo, José Antonio, and Jonathan Malagón (2015), “Colombian Monetary and Exchange Rate Policy over the Past Decade”, *Comparative Economic Studies*, 53:3, pp. 454-482.
- Ostry, Jonathan D., Atish R. Ghosh, Karl Habermeier, Marcos Chamon, Mahvash S. Qureshi, and Dennis B. S. Reinhardt (2010), “Capital Inflows: The Role of Controls”, *IMF Staff Position Note*, SPN/10/04, Washington D.C.: International Monetary Fund.
- Ostry, Jonathan D., Atish R. Ghosh, Karl Habermeier, Luc Laeven, Marcos Chamon, Mahvash S. Qureshi, Annamaria Kokenyne, (2011), “Managing Capital Inflows: What Tools to Use?” *IMF Staff Discussion Note SDN/11/06*, Washington D.C.: International Monetary Fund.
- Ostry, Jonathan D., Atish R. Ghosh, Marcos Chamon, Mahvash S. Qureshi (2012), “Tools for Managing Financial-Stability Risks from Capital Inflows,” *Journal of International Economics*, 88 (2):407–421.
- Prasad, Eswar S., Kenneth Rogoff, Shang-Jin Wei, and M. Ayhan Rose (2003). “Effects of Financial Globalization on Developing Countries: Some Empirical Evidence”. *IMF Occasional Paper*, No. 220, Washington, DC: International Monetary Fund.

- Prasad, Eswar S., Raghuram G. Rajan, and Arvind Subramanian (2007), *Foreign capital and economic growth*, Working Paper 13619, National Bureau of Economic Research.
- Rapetti, Martin (2013). “Macroeconomic policy coordination in a competitive real exchange rate strategy for development.” *Journal of Globalization and Development* 3.2: 1-31.
- Rapetti, Martin, Peter Skott and Arslan Razmi (2012), “The real exchange rate and economic growth: Are developing countries different”, *International Review of Applied Economics*, 2012:1-9.
- Razmi, Arslan, Martin Rapetti, and Peter Skott (2012), “The real exchange rate and economic development,” *Structural Change and Economic Dynamics* 23.2:151-169.
- Rincón, Hernán and Jorge Toro (2010), “Are Capital Controls and Central Bank Intervention Effective?” *Borradores de Economía* 625, Bogotá: Banco de la República.
- Rodrik, Dani (2007), *One Economics, Many Recipes: Globalization, Institutions and Economic Growth*, Princeton: Princeton University Press.
- Rodrik, Dani (2008), “The real exchange rate and economic growth,” *Brookings Papers on Economic Activity*, Fall: 365-412.
- Rodrik, Dani (2013), “The Past, Present and Future of Economic Growth,” Working Paper 1, Geneva: Global Citizen Foundation.
- Rodrik, Dani, and Andrés Velasco (2000), “Short-Term Capital Flows”, in *Proceedings of the Annual World Bank Conference on Development Economics 1999*, Washington, DC: World Bank, pp. 59-90.
- Sengupta, Rajeswari and Abhijit Sen Gupta (2014), “Capital Flows and Capital Account Management in Selected Asian Economies”, Paper Prepared for the CIGI-INET Project on Macroeconomic and Financial Cooperation, September.
- Stiglitz, Joseph E. "Reforming the global economic architecture: lessons from recent crises." *The Journal of Finance* 54.4 (1999): 1508-1522.
- Stiglitz, Joseph E. (2014), “The Lessons of the North Atlantic Crisis for Economic Theory and Policy,” in Geroge Akerlof, Olivier Blanchard, David Romer, and Joseph E. Stiglitz (eds.), *What Have We Learned? Macroeconomic Policy after the Crisis*, Cambridge, Mass. and London: MIT Press, pp. 335-347.
- Stiglitz, Joseph E., and Amar Bhattacharya (2000), “The Underpinnings of a Stable and Equitable Global Financial System: From Old Debates to a New Paradigm”, in *Proceedings of the Annual World Bank Conference on Development Economics 1999*. World Bank, Washington, DC, pp. 91-130.
- Stiglitz, Joseph, and Bruce Greenwald (2003), *Towards a new Paradigm in Monetary Economics*. Cambridge University Press.
- Stiglitz, Joseph E., and Bruce C. Greenwald (2014), *Creating a Learning Society: A New Approach to Growth, Development, and Social Progress*, New York: Columbia University Press.

Stiglitz, Joseph E., Justin Yifu Lin, and Ebrahim Patel (eds.) (2014), *The Industrial Policy Revolution II: Africa in the 21st Century*, Houndmills, UK and New York: Palgrave Macmillan.

Weitzman, Martin L. (1974), "Prices vs. quantities," *The Review of Economic Studies* (1974): 477-491.