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Abstract

Unstable global capital flows to developing countries have been characteristic of the world economy in the wake of the global financial crisis. The nations that have deployed capital controls to mitigate the negative effects of such flows have been branded as "protectionist" by some. This paper argues that such claims are unfounded. There is a longstanding strand of modern economic theory that dates back to Keynes and Prebisch and continues to this day that sees the use of capital controls as essential for macroeconomic stability and in order to deploy an independent monetary policy. In a most recent development, a "new welfare economics" of capital controls has arisen within the mainstream that sees controls as measures to correct for market failures due to imperfect information, contagion, uncertainty and beyond. Taken as a whole then, rather than the "new protectionism," capital controls could be seen as the "new correctionism" that re-justifies a tool that has long been recognized to promote stability and growth in developing countries.

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I.   Introduction

> *"the imposition of barriers to inward capital flows have begun to replace tariffs and quotas in the trade protectionism arsenals of governments." Richard Dodd and Michael Spence, Financial Times 2011*

Unstable global capital flows to developing countries have been characteristic of the world economy in the wake of the global financial crisis. Such flows have triggered asset bubbles and exchange rate appreciation in a number of emerging and developing country markets, especially from 2009 until the Eurozone jitters in the fourth quarter of 2011. In response, some individual nations have deployed capital controls. Resorting to these measures has met a mixed response. On the one hand, institutions such as the International Monetary Fund have supported the use of controls in limited circumstances. On the other hand however, there has been a vociferous response by leading politicians, distinguished economists, and in the blogosphere claiming that the use of capital controls amounts to financial protectionism. Former UK Gordon Brown referred to the use of controls by emerging markets in 2010 as protectionist, as has former Nobel laureate Michael Spence (see Brown, 2011; Dodd and Spence, 2011).

This paper argues that such claims are unfounded. There is a longstanding strand of modern economic theory that dates back to Keynes and Prebisch and continues to this day that sees the use of capital controls as essential to financial stability, the ability to deploy an independent monetary policy, and to maintain exchange rate stability. These theories were supplanted in the 1980s and 1990s by theories of capital market liberalization. However, the empirical record has shown that capital market liberalization was not associated with growth in developing countries. In a most recent development, mainstream economists have developed a "new welfare economics" of capital controls that sees controls as measures to correct for market failures due to imperfect information, contagion, uncertainty and beyond. Taken as a whole then, rather than the "new protectionism," capital controls should be seen as the "new correctionism" that re-justifies a tool that has long been recognized to promote stability and growth in developing countries.

Capital controls are regulations on capital flows that buffer from a number of risks that come with financial integration. Chief among those risks are currency risk, capital flight, financial fragility, contagion, and sovereignty (Grabel, 2003). Cross-border capital flows to emerging and developing countries tend to follow a similar pattern. Between 2002 and 2007 there were massive flows of capital into emerging markets and other developing economies. After the collapse of Lehman Brothers, there was capital flight to the "safety" of the U.S. market, which spread the North Atlantic financial crisis to emerging markets. As interest rates were lowered for expansionary purposes in the industrialized world between 2008 to 2011, capital flows again returned to emerging markets, where interest rates and growth were relatively higher. Finally with Eurozone jitters in the final quarter of 2011, capital flight occurred to the "safety" of the US and beyond. The carry trade was one of the key mechanisms that triggered these flows. Increased liquidity induced investors to go short on the dollar and long on currencies in nations with higher interest rates and expectations of strengthening exchange rates. With significant leverage factors, investors gained on both the interest rate differential and the exchange rate movements. Many nations deployed capital controls to regulate the negative effects of cross-border capital volatility.

Economists usually differentiate between capital controls on capital inflows and controls on outflows. Moreover, measures are usually categorized as being "price-based" or "quantity-based" controls. Table 1 lists examples of controls on inflows and outflows, though sometimes the distinction can be murky (Epstein, Grabel, and Jomo 2008; Ocampo, Kregel, and Griffith-Jones 2007). Examples of quantity-based controls are restrictions on currency mismatches, and minimum stay requirements and end-use limitations. Many of these have been used by nations such as China and India. Examples of price-based controls include taxes on inflows (Brazil) or on outflows (Malaysia). Unremunerated reserve requirements are both. On one hand they are price-based restrictions on inflows, but they also include a minimum stay requirement which can act like a quantity-based restriction on outflows.

Table 1

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Capital Controls: Illustrative List

Inflows
- Unremunerated reserve requirements (a proportion of new inflows are kept as reserve requirements in the central bank)
- Taxes on new debt inflows, or on foreign exchange derivatives
- Limits or taxes on net liability position in foreign currency of financial intermediaries
- Restrictions on currency mismatches
- End use limitations: Borrowing abroad only allowed for investment and foreign trade
- Limits on domestic agents that can borrow abroad (e.g., only firms with net revenues in foreign currency)
- Mandatory approvals for all or some capital transactions
- Minimum stay requirements

Outflows
- Mandatory approval for domestic agents to invest abroad or hold bank accounts in foreign currency
- Mandatory requirement for domestic agents to report on foreign investments and transactions done with their foreign account
- Prohibition or limits on sectors in which foreigners can invest
- Limits or approval on how much non-residents can invest (e.g., on portfolio investments)
- Restrictions on amounts of principal or capital income that foreign investors can send abroad
- Limits on how much non-residents can borrow in the domestic market
- Taxes on capital outflows

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Controls are most often targeting foreign-currency and local currency debt, equity, and currency trading of a short-term nature. Foreign direct investment is often considered less volatile and less worrisome from a macroeconomic stability standpoint. Inflow restrictions on currency debt can reduce the overall level of such borrowing and steer investment toward longer-term productive investments and thus reduce risk. Taxes on such investment cut the price differential between short and long term debt and thus discourage investment in shorter-term obligations. Outflows restrictions and measures are usually deployed to "stop the bleeding" and keep capital from leaving the host nation too rapidly. A variety of these techniques have been used during the global financial crisis but have been branded as protectionist measures.

The remainder of this paper is divided into four additional parts. Part II examines the origins of modern economic thought pertaining to capital controls, discussing Keynes, Prebisch to the post-Keynesian and Structuralist economists that continue to write on this topic. Part III critically surveys the rise and the fall of the economic theory and evidence pertaining to capital account liberalization. Part IV introduces the new welfare economics of capital controls. The final part of the paper summarizes the main points of the articles and suggests a research and policy agenda for making capital controls part of the broad toolkit for developing country growth

and stability. The paper puts more emphasis on the new welfare economics of capital controls and less on the Keynes-Prebisch tradition only because it is a new and rapidly growing field in mainstream theory and that the Keynesian tradition of capital controls has been covered widely in the literature. The point here is, a wide variety of economic theorists now see capital controls as key parts of the toolkit at a point in time in economic history where we need as many tools in the kit as possible.

II.   Tell me something I don't already know: Keynes, Prebisch and their successors on capital controls

Starting with economists such as Raul Prebisch, John Maynard Keynes, and others, there has been a long tradition in economics that has viewed capital controls as essential parts of the macroeconomics and development toolkit that continues to this day.   Even before Keynes, Prebisch saw controls as essential counter-cyclical measures to manage booms and busts and as important for the management of the exchange rate. Keynes of course also saw controls as essential for maintaining stability and steering investment toward productive, employment-generating growth and successfully advocated for regulations on capital transactions at Bretton Woods. Keynes also saw controls essential for the management of an independent, employment-based monetary policy. Post-Keynesians and Post-Structuralists, as well as numerous United Nations agencies and developing country policy-makers, have carried this thread to this day.

Prebisch and Keynes

Two major economists of the early 20th century were among the first to discuss the need for capital controls in modern economic theory. Raul Prebisch and John Maynard Keynes each articulated the need for regulating cross-border capital as a macroeconomic management tool in order to allow for national policy autonomy to generate productive economic activity. Each of these economists spawned "post-structuralist" and "post-Keynesian" approaches to economic policy. Leaders in these fields, as well as policy-makers have further developed and justified these early contributions by Prebisch and Keynes.

New archival work by economists Esteban Perez and Matias Vernengo (2012) has unearthed how Prebisch had,

> "In particular, a preoccupation with the management of the balance of payments and the need for capital controls as a macroeconomic management tool, considerably before Keynes and White's plans led to the Bretton Woods agreement."(Perez and Vernengo, 2012)

These authors point out that Prebisch oversaw the implementation of counter-cyclical capital controls during his tenure at the Central Bank of Argentina and quote Prebisch as saying

> "This capital [short-term capital] went to further inflate the categories of goods or assets that were already inflated, and did not translate, except in very rare occasions, in a real increase in the production of the country… the measures adopted by the government allow to make an exception, to allow the inflow of these capitals if it is shown that these are oriented towards the increase in real production…" (quoted in Perez and Vernengo, 2012)

Of course the name that most would say is the intellectual antecedent of the contemporary use of capital controls is Keynes. Keynes saw the regulation of speculative capital as essential to maintain national autonomy for productive growth and employment (Crotty, 1983; . In a statement that foreshadows much of the concerns of today that relate the carry trade to excessive capital flows in the wake of the financial crisis (with an unregulated carry trade raising the interest rate to cool off asset bubbles will actually attract more speculative capital, not less), Keynes said:

> "In my view the whole management of the domestic economy depends on being free to have the appropriate rate of interest without reference to the rates prevailing elsewhere in the world. Capital controls is a corollary to this." (quoted in Helleiner, 1994, 34.)

Paul Davidson points out that Keynes also say controls as a means to manage capital flow booms and busts:

> If there is a sudden shift in the private-sector's bull-bear disposition, what can be called the bandwagon effect, then price stability requires regulations constraining capital flows into and/our out of the market to preven the bears from liquidating their position too quickly (or the bulls from rushing in) and overcoming any single agent (private or public) who has taken on the responsible task of market maker to promote "orderliness." (Davidson, 2009, 100).

During the Bretton Woods negotiations that established a fixed but adjustable pegged exchange rate system, the International Monetary Fund (IMF), and the World Bank, Britain's chief negotiator, Keynes, and his US counterpart Harry Dexter White *both* agreed that a distinction should be made between "speculative" capital and "productive" capital, and that speculative "hot money" capital was to be scrutinized (Abdelal, 2007). Indeed, at those meetings Keynes argued that, "control of capital movements, both inward and outward, should be a permanent feature of the post-war system." (quoted from Helleiner, 1994, p33). Capital controls (on capital account transactions) were made fully permissible under the Articles of the International Monetary Fund and remain so, despite efforts to the contrary, to this day. As Keynes said, "What used to be a heresy is now endorsed as orthodoxy." (Helleiner, 1994, 25).

Post-Keynesian and Post-Structuralist Economic Thought

Both Post-Keynesian and Structuralist economists have continued to emphasize that uncontrolled capital flows unleash serious financial risks and macroeconomic constraints, which render economies vulnerable to financial crises, exchange rate instabilities, slower output growth and greater unemployment. A full survey of this literature is beyond the scope of this paper, but a

handful of the core and more contemporary examples are necessary to note in order to show that these schools have long seen controls as a cornerstone of macroeconomic policy.

One of the more novel applications is in the Minsky tradition. To capture the financial fragility inherent in a regime of free capital flows, Weller (2001) and Arestis and Glickman (2002) extend Hyman Minsky's *financial instability hypothesis* to an open and financially liberalized economy. In a financially liberalized open economy without capital controls, an economic boom will significantly "import the drive towards financial innovation" by attracting capital inflows from foreign investors looking for new investment opportunities and enabling households, firms, the government and banks to seek foreign sources of finance. The initial economic euphoria, reflected in rising asset prices, investments and profits, acts to validate and encourage these foreign borrowings. Capital inflows produce an appreciation of the domestic currency, and thus encourage the taking of short-term positions in foreign currency. The euphoria also causes economic units to become more reckless in the risks they undertake, and resort to greater speculative financing.

However, over time, the initial economic boom and resulting increase in demand also acts to increase costs in the domestic capital goods industries. These rising costs, combined with the surge in speculative financing act to generate present-value reversals, and a decline in asset prices. With an erosion of their profit margin, over time, some speculatively financed units are likely to begin to default, and the chances of more units following suit increases. Furthermore, the increase in foreign borrowings, particularly short-term liabilities, results in a rising debt-to-reserves ratio. Without capital controls, and given the rapid reversal tendency of short-term capital flows, both these developments will generate a panic among foreign investors, resulting in a rapid flight towards liquidity and a heavy selling of the domestic currency. Capital flight acts to reduce the values of assets, and through possible spillover effects in other sectors, it tends to aggravate the risk of a sharp depreciation in the domestic currency, making a country vulnerable to a financial crisis.

Given the volatile and pro-cyclical nature of free capital flows and their destabilizing effects, Post-Keynesian and Structuralist economists (e.g., Davidson 1992-93, Eatwell and Taylor 2002, Ocampo 2002, Helleiner, 1998, Saad-Filho, 2007; Palma 2002 and Grabel 2006) have argued for a permanent system of capital account regulation, which not only regulates capital outflows during financial crises, but also controls capital inflows during economic booms. This could involve regulating the international exposure of domestic banks, regulating the availability of foreign exchange to domestic banks and private sector residents, and reducing real deposit rates. By helping to avoid overborrowing, such a system provides a means of exercising monetary and domestic credit restraint during economic booms, and thereby guards against unsustainable exchange rate appreciations, and thus against the very occurrence of crises. In the event that a crisis nevertheless occurs, regulating capital outflows can help to avoid a sharp currency depreciation, and unmanageable increases in debt-service costs.

With respect to the threat of capital flight, Grabel (2006) emphasizes that policies restricting capital account convertibility help to reduce this risk by discouraging foreign investors from buying short-term assets that are most vulnerable to capital flight and by restricting their ability to liquidate such investments and send the proceeds out of the country. Furthermore, by reducing a country's vulnerability to sharp exchange rate fluctuations, capital flight and financial

fragility, capital controls can guard against the risk of contagion due to financial and macroeconomic instability in another economy.

Frenkel (2002) argues that the destabilizing effects of unregulated capital inflows (e.g., unsustainable expansions in credit and liquidity, exchange rate appreciations and appreciation of financial and real assets) will be exacerbated in developing countries when financial markets are small, and not sufficiently diversified. He cites the Latin American experience, where liberalization was introduced in an environment in which the degree of monetization and financial depth was low, banking systems were weak , the menu of financial assets was poor and credit for the private sector was scarce.

The Post-Keynesian and Structuralist literature also draws attention to the fact that free capital flows severely reduce the degrees of freedom for macroeconomic management and policy autonomy since sustaining private foreign capital inflows require a strong exchange rate and high interest rates. A high interest rate acts to discourage domestic investment, while an appreciating exchange rate reduces the competitiveness of a country's exports. Thus, the ability to stimulate domestic investment (in accordance with national priorities of output and employment) is curtailed, and it becomes difficult for a country to use the exchange rate as a strategic device for gaining entry into the world market for manufactured goods (Nayyar 2002). Moreover, as pointed out by Davidson (2000) besides a loss of export-market share, an appreciating exchange rate also threatens domestic firms with a loss of home-market share since imports become cheaper. By making it more difficult for domestic entrepreneurs to gauge the potential profitability of large investment projects involving significant irreversible sunk costs, exchange rate volatility can have serious adverse effects on domestic investment.

Nayyar (2002) also argues that when short-term inflows such as portfolio investment become a major means of financing trade and current account deficits, the resulting appreciation of the real effective exchange rate acts to further widen these deficits. A vicious circle emerges, with these larger deficits requiring even greater portfolio investment inflows. Persistent large deficits may, over time, reduce investor confidence, and thus generate adverse expectations, ultimately resulting in a reversal of inflows and speculative attacks on the domestic currency.

Besides constraining policies in normal times, free capital mobility also severely constrains policy autonomy during a financial crisis, therefore exacerbating problems of falling output, reduced domestic investment and unemployment. As Grabel (2006) argues, a crisis forces a government to resort to contractionary monetary and/or fiscal policies (through higher interest rates and reduced social spending) so as to reverse a capital flight. This curtails the ability to use expansionary policies (such as government deficits or low interest rates) to stimulate aggregate demand and domestic investment.

Epstein and Schor (1992) develop a macroeconomic model which captures how capital controls allow for macroeconomic management and policy autonomy by controlling the links between the domestic real interest rate, capital flows and real exchange rate. By providing a safeguard against capital flight, a system of effective capital controls allows a government to pursue an expansionary monetary policy by lowering the domestic real interest rate without significantly affecting the real exchange rate or foreign exchange reserves. By stimulating domestic investment, an expansionary monetary policy can therefore be used to raise domestic output and employment. Similarly, even if an expansionary fiscal policy raises the domestic real

interest rate, by restricting capital inflows, capital controls will cause the real exchange rate to appreciate less than it would in the case of unrestricted inflows. Less exchange rate appreciation in turn would mean that export competitiveness is less adversely affected. Finally, by regulating capital outflows, capital controls also insulate an economy from adverse effects on domestic investment and/or export competitiveness due to changes in foreign real interest rates or foreign policies.

These perspectives never went away, and have indeed long been championed by such UN agencies as UNCTAD, UNDESA, ECLAC, and beyond. In addition, numerous countries have drawn on these insights when putting controls in place. Indeed, Brazil to this day refers to its macroeconomic policy as in the "Keynesian-Structuralist" tradition regarding these matters (Barbosa, 2011). That said, these institutions and nations became marginalized in the 1980s and 1990s when capital market liberalization became the fashion in mainstream economics and practice. Only now have these ideas and institutions regained some prominence in the wake of the crisis.

III.   The Rise and Fall of Capital Market Liberalization in Developing Countries

Backed by new developments in economic theory and interest groups that sought to deepen global capital markets, capital account liberalization became vogue in the 1980s and 1990s. While capital market liberalization seemed to be correlated with economic growth in the industrialized world during this period, the same cannot be said in developing country contexts. Towards the end of this liberalization in the early 1990s, however, currency crises erupted and many developing nations became afflicted with financial crises. In lieu of this, the merits of capital account liberalization in developing countries came under great scrutiny in the early 2000s and even moreso in the wake of the financial crisis.

The economics of capital account liberalization are fairly simple. The neoclassical growth (Solow) model provides a standard theory for analyzing the effects of capital market liberalization on growth. Particularly, this theory substantiates the benefits of financial liberalization. The neoclassical model explains how opening capital markets can accelerate growth in developing countries, which are capital scarce and thus have a higher return to capital.The model employs two factors, capital and labor, as well as labor-augmenting technological progress. In defining an equation of capital accumulation and the steady state, the dynamics of the model can be derived. For example, capital will flow into a liberalizing developing country whose interest rate is higher than the world interest rate. The cost of capital, in the steady state, before liberalization is determined by the interest rate and the rate of depreciation:

$$f'(k) = r + \delta$$

After liberalization, however, the cost of capital is determined by world interest rate, r^*, which is less than r:

$$f'(k) = r^* + \delta$$

Hence, the impact of liberalization works through the cost of capital, which falls upon liberalization due to the capital inflow. Additionally, in the short run, the growth rate of capital and per capital output increase during the transition.

However, in terms of empirical evidence, it has been shown that capital market liberalization in developing countries is not associated with economic growth (Prasad *et al*. 2003). Indeed, the most recent research has shown that capital market liberalization is only associated with growth in nations that have reached a certain institutional threshold—a threshold that most developing nations are yet to achieve (Kose, Prasad, and Taylor 2009). This is partly due to the fact that the binding constraint for some developing country growth trajectories is not the need for external investment, but the lack of investment demand. This constraint can be accentuated through foreign capital flows because such flows appreciate the real exchange rate, thus reducing the competitiveness of goods and reducing private sector willingness to invest (Rodrik and Subramanian 2009).

Some theorists still dispute these findings. The predictions of this model pertaining to the impact of capital market openness, however, are only somewhat reinforced by empirical studies. In his investigation of international capital mobility, Henry (2007) explains the usefulness of this model in quantifying the relationship between capital liberalization and output growth. The work explains the predictions of this theory and then reviews corresponding empirical studies, outlining their results, methodologies, and most importantly, their limitations. Despite the simplifying assumptions and lack of market frictions in the Solow model, Henry shows that the theory itself still maintains predictive power for the short-run effects of capital liberalization as well as the rates of convergence to steady state growth rates.

The reasons why many empirical studies fail to capture the growth benefits of liberalization relate to their methodologies. Cross-sectional studies employ three main drawbacks. First, studies measure *permanent* impact on growth rates, rather than temporary impact. According to neoclassical theory, liberalization permanently decreases the cost of capital, and temporarily raises the growth rates of capital and output. Second, the measure of capital openness is binary and subject to measurement error. Studies have therefore found no significant impact of binary measures on growth rates. The intensity of openness would provide a more realistic measure, so that the intensive margin of openness is studied instead of the extensive margin. Addressing this measurement issue, Chinn and Ito (2005) and Edwards (2007) are such studies that develop intensive measures of openness. Chinn and Ito (2005) develop a measure of intensity of capital openness, called the Chinn-Ito index. Using this index, the authors obtain significant effects of capital openness on equity market development. Nonetheless, these measures still do not account for different types of restrictions that are liberalized, e.g. on outflows versus inflows, or different types of flows. Finally, many of these studies do not separate developed from developing countries in the analysis. This separation is crucial since developing countries liberalized at later time periods and have relatively smaller capital stocks.

Improvements to the above empirical limitations center on the use of policy experiment approach and various extensions to this methodology. The policy experiment approach entails

measuring the impact on growth before and after the onset of a particular liberalization, such as opening a country's stock market. The onset can be measured by the date of a government's announcement of liberalizing policy, or of a jump in a country's investibility index.

Testing certain extensions to the neoclassical theory is very relevant to the policy experiment approach. An important extension is adding uncertainty to the model, such that capital investment yields risky payoffs. In this case, according to the standard CAPM model, the cost of capital depends on also an equity premium (the price of risk times the variance of the market return):

$$f'(k) = r + \delta + \gamma Var(r_M)$$

where γ is the price of risk. When a country opens its financial market, the cost of capital then depends on the world return as well:

$$f'(k) = r + \delta + \gamma Cov(r_M, r_W)$$

According to the theory, stock market liberalization will temporarily raise the growth rates of capital and output if the covariance of the local market and world returns is less than variance of the local market return (so that the cost of capital decreases). In the asset pricing literature, dividend yields are common proxies of the cost of capital and can be used to test this theoretical prediction. Such studies using this policy approach have confirmed this result of reductions in the cost of capital.

In this approach, an ideal model according to Henry (2007) would include time dummies for dates of liberalization and a window of less than six years in order to test short-run impact. Studies utilizing these techniques confirm the predictions of the theory. To account for omitted variable bias, including other types of liberalizations such as trade reforms should be included. Studies that have added other variables find positive and significant impact of stock market liberalization on growth. However, the size of the impact is much smaller than what the theory predicts. Possible explanations include treating liberalization as a one-shot event, assuming interest rate differentials that are unrealistically large, and not accounting for capital market imperfections which lead to persistent rate differentials.

Recent work has addressed these objections and has given rise to the new welfare economics of capital controls discussed in the next section. The empirical findings of Aizenman et al. (2011), stark implications to the economic costs of financial integration. Particularly, as is now the focus of a growing body of recent literature, financial integration in the presence of distortions and externalities entails welfare costs that may offset the intended benefits. Motivated by the vast international capital liberalization of emerging markets in the 1990s and their subsequent crises, Aizenman et al. (2011) measure the differential impact of disaggregated capital flows on economic growth before and after the recent global financial crisis. In effect, the study addresses several shortcomings of the empirical literature, as noted in Henry (2007). Their dataset tracks capital flows and output growth of 100 countries from 1990 to 2010. In conducting a more thorough welfare analysis, the authors decompose capital flows into FDI, portfolio investment, equity investment, and short-term debt, as well as distinguish between inflows and

outflows. Using cross-sectional regressions and fixed-effects estimation, the study measures the impact of these flows on per capital GDP growth rates in the pre-crisis period, 2001-2005, and the crisis period, 2006-2010. In comparing the two periods, the relationship between capital flows and financial instability can be better understood.[2] The regressions also include a state fragility variable to control for weak institutions, as recommended by Henry (2007) and done in Chinn and Ito (2005), and interaction variables to account for exchange rate stability and monetary independence.

In their study short-term debt (as measured by short-term external debt to GDP ratio) has a negative growth effect.   These results also show that countries with weaker institutions and greater short-term debt were worse off in the crisis period. Such findings can be tested across emerging market economies in order to explain the relative performance of countries during crisis periods; for instance, the authors confirm their findings for two case studies, Thailand and Kazakhstan. Furthermore, these empirical implications on the impact of external debt correspond to the predictions of numerous theoretical models, e.g. Aizenman (2010).

IV.   The New Welfare Economics of Capital Controls

The demise of capital market liberalization has only been accentuated by the global financial crisis.   As global capital flows became recognized as having adverse effects in the wake of the crisis, UN agencies and governments with post-Keynesian and Post-Structuralist tendencies have regained their legitimacy. What is equally remarkable is a new strand of economic theory has arisen in response to the inadequacies of capital market liberalization and the recognition of the inherent instability of capital flows to developing countries. "New" Keynesians working in a general equilibrium context have begun to see capital controls as measures to correct for market failures in the world economy—thus arguing that controls are market correcting rather than distortionary or protectionist. This has been referred to as the "new welfare economics of capital controls."

Of course, the Mundell-Fleming model was the first to incorporate controls into a general equilibrium framework. As a culmination of separate studies by Robert Mundell and Marcus Fleming, the model outlines a framework designed to model a global economy and capital mobility in the short run (Prasch, 2001). The Mundell-Fleming theory refers to specific articles by Robert Mundell and Marcus Fleming, e.g. Mundell (1961b, 1961a, 1962, and 1963) and Fleming (1962). The Mundell-Fleming model is a (New) Keynesian model of a small open economy, in which world prices, incomes, and interest rates are exogenous, in the short run. Other assumptions include a constant price level, so that price rigidity is a feature as opposed to flexible prices. It is an extension of the IS-LM framework by introducing the international sector, or balance of payments, i.e. the current and capital accounts.

These works attempted to uncover the optimal policy mix as well as the optimal exchange rate regime for open economies with mobile capital. One main conclusion of Mundell (1963) is

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[2] Also, estimation in two event windows accounts for structural breaks; as expected, the R^2 improves by 20 to 40 percent in dividing the sample into two periods.

that perfect capital mobility, a fixed exchange rate regime, and independent monetary policy cannot all coexist; countries can maintain at most two of the three. This so-called "trilemma," continues to be reinforced by empirical studies and thereby remains a central assumption of studies on capital flows (Aizenman, Chinn, and Ito (2010), Aizenman and Pinto (2011)). Moreover, the Mundell-Fleming model explicitly verifies that if capital is internationally mobile and the nominal exchange rate is fixed, monetary policy is constrained to only alter the level of international reserves, while fiscal policy can effectively alter output. Fleming (1962) specifically offers these conclusions in its analysis of government policies. The trilemma result of Mundell-Fleming provides a basis for which policy responses in countries, especially emerging markets, to external shocks (e.g. capital inflows and outflows) can be analyzed.

Capital Controls as a Pigouvian Tax

The global financial crisis and the role that capital mobility played in the crisis and its aftermath has attracted a burgeoning level of theoretical attention not seen on this issues since the days of Mundell and Fleming. Indeed, recent studies of capital controls directly model the welfare implications of controls by focusing on the externalities of capital flows. These studies focus on the macroprudential role of capital controls. A Pigouvian tax on capital inflows is one such macroprudential policy that corrects for the externalities associated with highly integrated capital markets.

Theoretical analysis with emphasis on externalities and welfare effects can be described as the "new welfare economics" of capital controls, as stated in Jeanne, Subramanian and Williamson (2012). The main motivation of this literature stems from the recent global financial crisis and the capital flow behavior in emerging markets. In the recent decade emerging markets have been subject to substantial capital inflows and a buildup of international reserves. Such high levels of external borrowing raise the probability of sudden stops and capital flight. As observed during the 2008-2009 financial crisis, deleveraging and fire sales of assets can result. Such are externalities associated with financial contagion, yet on the international level.

The externalities arise because borrowers do not internalize the impact of their behavior on aggregate instability, e.g. systemic risk and the likelihood of fire sales. The purpose of the prudential capital control is then to induce private agents (borrowers) to internalize the externalities. The optimal capital control is effectively a Pigouvian tax on capital inflows, which will enhance welfare and restore efficiency of the decentralized market equilibrium. This type of control may then improve financial stability and prevent sudden stops or capital flight. Indeed, emerging market economies such as Brazil have implemented controls in the forms of taxes on foreign debt; hence, their welfare implications are highly relevant to current public policy.

Recent literature on currency crises have focuses more on balance sheets effects and the amplification of shocks, which propagate a cycle of exchange rate depreciation, asset price declines, deteriorating balance sheets, and output contraction. Korinek (2011) uses a model of financial amplification to study the pecuniary externalities of free capital flows and the resulting optimal policy that restores market efficiency. Here, the externality is exchange rate fluctuations. The model is an open economy with two time periods, one tradable good and one nontradable good. The representative consumer maximizes his utility subject to each period's budget

constraint and his borrowing constraint. After deriving the optimality conditions assuming binding borrowing constraints, Korinek shows that the consumer's value of liquidity is higher when the borrowing constraint is binding rather than loose. The decentralized equilibrium contrasts that of the social planner, who internalizes the externality by making the exchange rate endogenous in aggregate tradable resources. Comparing the value functions of the two maximization problems, the author shows the liquidity is undervalued by the private agent. This undervaluation creates economic distortions in the form of overborrowing, excessive risk-taking, and excessive short-term debt. To offset these distortions, optimal policy alternatives include a Pigouvian tax on debt inflows which closes the wedge between the private and social valuations. An additional policy is unremunerated reserve requirements which impose an opportunity cost on the lender. Such a policy was utilized in Chile and effectively altered the composition of inflows to longer maturities (Edwards (1999)). In Korinek (2010) and Bianchi (2011) the optimal tax rates are actually computed for specific countries, while Korinek (2011) computes a general optimal rate (of 2 percent) for a multi-country DSGE model.

Jeanne and Korinek (2010) model capital flow externality and a Pigouvian tax, with emphasis on the cyclicality of capital flows. The tax thus acts to mitigate the destabilizing effects of capital flows associated with deleveraging cycles. In particular, the model is strikingly similar to Korinek (2010), but shows more directly how this type of control alleviates macroeconomic volatility—specifically, by restricting inflows during booms which reduces outflows during busts. The model entails an open economy, but with three time periods and one good. In the decentralized equilibrium, the representative agent maximizes this utility function subjects to budget constraints and a collateral constraint. The social planner's problem differs since he internalizes the externality by recognizing asset prices are endogenous in aggregate wealth. As in Korinek (2010), the social marginal value of liquid wealth is larger than private marginal value. Hence, the externality here can be views the impact of excessive debt on aggregate debt, which can raise the likelihood of a sudden stop. The Pigouvian tax (on debt inflows) induces the private sector to take on less debt, increasing efficiency by correcting the wedge between the marginal values.

An important contribution of this paper is that the authors show how the probability of a sudden stop varies with the Pigouvian tax rate and a liquidity shock. The optimal tax, which varies with the size of the shock, can not only reduce the probability of a sudden stop, but also the size of the stop. For example, the optimal rate for an economy with a 10 percent probability of sudden stops is 1.3 percent per dollar borrowed. A more complete study is Jeanne and Korinek (2010), which uses an infinite-horizon DSGE model to derive optimal Pigouvian taxes.

Another study outlining a Pigouvian tax as a capital control is Aizenman (2010). The work is motivated by emerging market (EM) crisis experiences—particularly, by the large rise of international reserves (IR) as a share of GDP in EM countries (Korinek and Pinto (2011), p. 11). South Korea is one such country that has hoarded its foreign reserves as a prudential policy against a currency crisis. Theories behind the motives for hoarding have evolved from the buffer stock approach to the Guidotti-Greenspan rule to finally, after the East Asian crises, self-insurance. Hoarding IR provides a means of self-insurance against sudden stops and deleveraging crises. If reserves are too low, a deleveraging crisis induces early liquidation by banks, depressing the selling price of capital and thus, fire sales occur. The deleveraging also

increases the demand of foreign currency, bidding up the foreign currency price, inducing more early liquidation. Hence, Aizenman (2010) examines this fire sale externality, in which individual banks do not internalize the impact on fire sale prices. His model investigates the two prudential policies: hoarding IR and a Pigouvian tax on external borrowing. Aizenman's scrutinizes the issue that IR hoarding may have limited efficacy in preventing runs.

To derive the optimal policy mix, Aizenman (2010) employs a model in the standard bank run framework of Diamond and Dybvig (1983), in which agents invest in an asset with a long-term return but subject to a liquidity shock that induces early liquidation. The representative agent, or entrepreneur, is the bank. The work is an important contribution to the literature on rollover crises and currency runs because the behavior of banks is directly modeled, rather than arbitrary speculators. The model modifies Diamond and Dybvig (1983) by modeling a liquidity shock in an open economy in which banks have a stock of foreign reserves, so there exists foreign borrowing. In the decentralized equilibrium, the bank does not internalize the fire-sale effect, whereas the social planner recognizes that the selling price of capital, or liquidation cost, is increasing in aggregate liquidation. As the first order conditions show, the marginal social benefit of borrowing is lower than the private benefit, and the marginal social benefit of hoarding is higher than the private one. The private and social marginal benefits, plotted against external debt, is depicted in the following diagram:
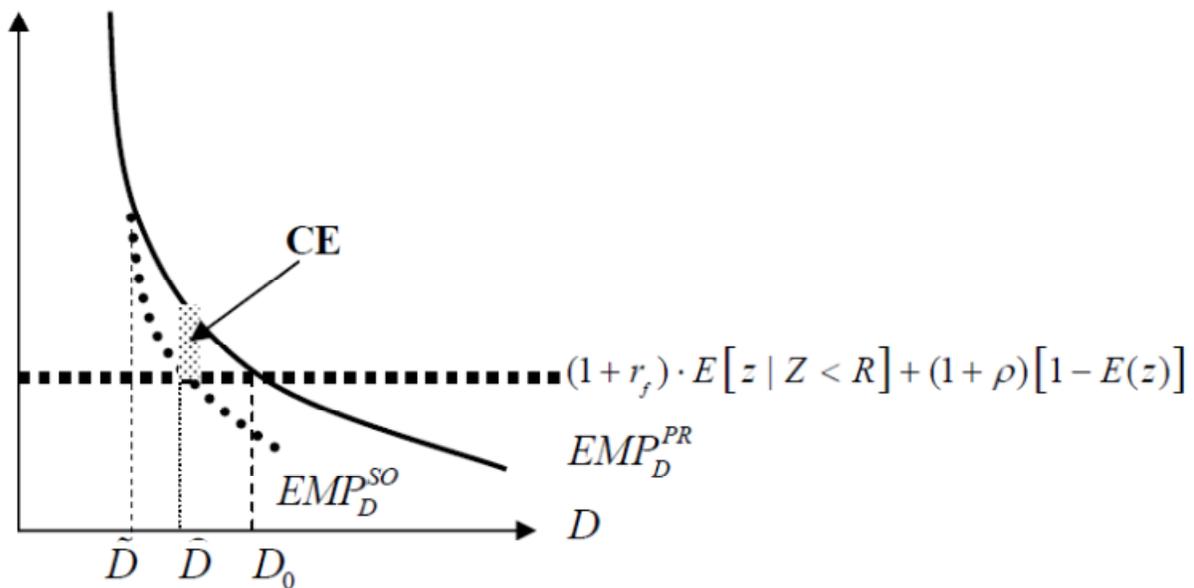
Source: Aizenman (2010) Figure 4, page 28.

The private marginal product of investment funded by external borrowing is above the social marginal benefit when the probability of costly liquidation is greater than zero, i.e. when external borrowing exceeds $\tilde{D}$. The optimal level of external debt is given by $\hat{D}$, and the area CE denotes the fire-sale externality, which induces the gap between the private and social values.

After computing new first order conditions, the optimal policy is shown to be an external borrowing tax, so as to reduce external borrowing (the distorted activity) as well as hoard reserves. Furthermore, hoarding is financed by revenues from the borrowing tax. The author also notes that the borrowing tax is akin to FDIC insurance, which entails insurance premiums on bank deposits, i.e. a tax on bank borrowing.

Prudential policies for capital flows in preventing sudden stops and capital flight remain highly relevant in modern emerging market economies. The most recent episode of capital flight was late September of 2011, when emerging markets experienced heavy outflows in fixed income funds in addition to equity funds. Fixed income redemptions were a striking 62 percent higher than redemptions after the collapse of Lehman.[3] EM currencies dipped substantially against the dollar, and sovereign and corporate bond yields spiked. EM equities have taken a plunge during this period: MSCI EM index, which peaked in April 2011, are down as much as 25 percent on the year. The hasty drop in EM stocks is almost 3 times the drop in the S&P500 and more than twice the drop in European stocks. Explanations for these reversals include excessive credit expansion and risk-taking, asset price bubbles, and heavy capital inflows. Prudential regulation such as Pigouvian taxes thus remains a crucial part of future research on capital controls.

Capital Controls, Liberalization, and Contagion

Rising capital market liberalization and the recent global financial crisis has motivated many studies to examine the adverse consequences of highly integrated markets. J.E. Stiglitz has been a significant skeptic of capital market liberalization and has presented arguments for intervention in capital flows based on empirical and theoretical findings (Stiglitz 2000; Stiglitz et al. 2006). The main arguments against full capital market capitalization arise from the following outcomes of open markets: increased risk diversification, more procyclical capital flows, increased risk of contagion, increased risk of capital flight, increased financial instability.

In a more recent study, Stiglitz (2010) present a theoretical framework to assess the optimal degree of integration when an economy is prone to a "system failure," i.e. a crisis that leads to bankruptcies and output destruction. The main tradeoff here is the benefits of risk-sharing weighed against the costs of bankruptcy and contagion. In this framework, Stiglitz shows how a system of capital controls called circuit breakers can increase welfare and can even allow for a higher degree of integration than if controls are not used. An interesting contribution of this theory is that the optimal size of a "risk-sharing club" as an alternative to circuit breakers that would limit contagion.

The baseline framework is a multi-country model with a sole input of capital that is subject to shocks. Given this uncertainty, expected output for each country is calculated from the average global expected output. With zero probability of failures, capital flow liberalization is optimal as it allows for smoothing, or risk-sharing. Yet with positive probability of a country failure, the model shows how the probability of an international system failure goes to 1 as the

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[3] http://www.ft.com/cms/s/0/2c960b4a-eb79-11e0-a576-00144feab49a.html?ftcamp=rss#axzz1bpK0y3JE

number of countries becomes infinite. One drawback of this analysis is that these probabilities are exogenous, yet they should be endogenously determined. They are, however, linked to thresholds on the capital stock; capital below a certain threshold leads to a country failure. Analysis focusing on threshold equilibria is commonly used in currency crisis literature, yet in this model, the definition of capital is not defined (Morris and Shin 1998). Additionally, the main results are all obtained from inequalities; hence, the highly theoretical analysis is unconventional and not intuitive. Nonetheless, the model allows for comparative statics to be utilized. For example, the benefits of liberalization decrease with the probability of failure and increase with shock volatility and the cost of shock volatility. The circuit breakers (capital restrictions) in this model depend on the size of the shocks to capital. However they have no practical application since the restrictions are not variable.

There are several interesting extensions the model above, including a model with linear output and bankruptcy costs and a dynamic model. In the former case, the welfare effects of integration depend on the size of bankruptcy costs, probabilities of extreme events, and the degree of risk aversion. This model extension more clearly defines the role of non-convexities in capital market openness. Non-convexities arise from credit market imperfections which can allow for risk diversification to be welfare-decreasing and can create financial instability by inducing credit flows to be procyclical. In this case, bankruptcy is the non-convexity; others include learning, R&D, and information imperfections such as moral hazard and adverse selection.

The latter extension of Stiglitz (2010), the dynamic model, is useful for comparing the short and long run effects. Here, integration is beneficial in the short run, yet is not in the long run. The general theory itself offers numerous other extensions and policy implications. In one section, the model derives optimal rates, as done in the previous models described above. The overall message of the paper is that capital controls can reduce financial instability, thereby reducing the risk of contagion, which poses significant adverse effects to output and growth.

(Neo-classical) Political Economy of Capital Controls

The optimal degree of capital restrictions has been derived in a political-economic approach by the use of voting models. Schulz (2000) formulates a simple small open economy model to first examine the impact of controls on factor prices and endowments to determine the optimal control for the representative individual. Then, the degree of restrictions that will actually be implemented is determined through aggregation of individual preferences in a median voter model. Schulz (2000) also employs a large open economy with unemployment, allowing for the framework to be more realistic, and shows how this extension affects voter behavior.

The small open economy model is a version of the MacDougall-Kemp model, which assumes factor mobility. In Schulz (2000), the small open economy has one homogenous good, two factors of (mobile) capital and (fixed) labor, and linear production. The capital control takes the form of a tax on dividends earned abroad, i.e. a tax on capital exports. The impact on aggregate and individual are computed by simply computed the change in incomes in response to small perturbations in the tax rate. Individual gains from the capital control depend on the

agent's relative endowment of capital, e.g. a lower relative endowment yields greater gains. In this model, however, specific optimal rates cannot be calculated. In the majority voting framework, the optimal tax rate depends on the individual's capital-labor ratio. In aggregate, voters will vote for capital controls if the median voter's capital-labor distribution is skewed to the right, i.e. the median voter has relatively low capital-labor ratio. Schulz (2000) extends this framework to a specific factors model a la Jones (1971) by modeling multiple sectors and two goods. The extension gives similar results for the optimal degree of control. This model adds complexity to the voter behavior since the relative endowment and size of industry sectors affect the voting outcome.

Finally, Schulz (2000) extends the model to a large open economy with unemployment. Flexible factor prices are thus assumed, which allows for a terms-of-trade effect. Since the impact of a control is shared by both foreign and domestic prices, capital flows react less to an increase in the capital tax, so that factor rewards are less affected. Interestingly, capital restrictions are tighter due to a positive factor terms of trade effect and to the presence of unemployment. Tighter restrictions may also be implemented since the median voter's optimal tax is higher in this economy. Restrictions are tighter if one allows for unemployment (with, say, a wage floor) because capital outflows are shown to aggravate unemployment. Hence, there exists a positive restriction that maximizes national income. Results on voting behavior carry over to this case, such that the median voter's tax rate is higher; thus, tighter controls will be implemented.

Schulz (2000) is an important contribution to capital control theory based on numerous theoretical extensions. The work provides a more complete framework by modeling the additional factor labor as well as by modeling a large open economy that accounts for unemployment—a crucial labor market imperfection that is often omitted in open economy analysis.

Capital Controls and Portfolio Theory

Another newly designed theory examines controls on capital flows in a portfolio allocation approach. Motivated by the lack of a unified theoretical framework to analyze capital controls, Magud, Reinhart, and Rogoff (2011) present a model to examine the effects of controls on short-term capital flows. The work extends the empirical analysis of Magud and Reinhart (2006) to a theoretical model using a portfolio allocation approach. Magud and Reinhart (2006) outlines the lack of a common empirical methodology to estimating the effectiveness of capital controls. The study addresses this lack of unified analysis by standardizing the results of previous empirical studies. In addition to the empirical findings, Magud, Reinhart, and Rogoff (2011) provide a theory to offer further evidence on the effects of capital controls. In showing that the effectiveness of controls is country-specific, their theory helps to rationalize the varied empirical findings across country studies.

Before presenting their model, Magud, Reinart, and Rogoff (2011) outline four "fears" caused by open capital markets, describe the measures and empirical results of existing studies, and provide results from their standardization technique. The four fears pertain to financial instability and thus explain the use of capital controls. All four: fear of appreciation or of a

floating exchange rate, fear of "hot money" flows, fear of large inflows, and fear of loss of monetary independence.

The standardization of empirical findings is accomplished by the construction of two indexes of controls: an index of Capital Controls Effectiveness and an index of Weighted Capital Control Effectiveness. The weighted index accounts for the degree of methodological rigor of each study in the sample. From these indices the authors obtain the following findings for controls on inflows and outflows. Controls on inflows increased monetary policy independence, altered the composition of capital flows, and reduced exchange rate volatility; controls did not seem to reduce the volume of new flows. Controls on outflows reduced the volume of outflows and increased monetary independence in Malaysia; however, in the rest of the countries, controls were generally ineffective across all measures.

Finally, the theory is presented to justify the above findings, e.g. altered composition of flows, reduction in flows, increased monetary independence, and reduction in exchange rate pressures. A portfolio balance approach is used to determine the optimal allocation of short-term and long-term capital flows for a representative investor. The framework allows for controls on outflows and inflows to be distinguished as well. The main conclusions of the simply yet straightforward model are that the effect of controls depends on the elasticity of short-term capital flows to total flows as well as on the level of short-term capital flows. Interestingly, under certain conditions the effects of price-based controls and quantity-based controls are equivalent.

The model is a two-period, small open economy with a unit mass of foreign investors. The flow of external capital is composed of either short-term or long-term flows, with short-term flows yielding a higher random real rate of return, r*, since they are riskier. The optimal share of short-term flows of the representative investor is the solution to the maximization of investor's utility, which is a function of the expected rate of return and the variance of capital flows. This optimal allocation, x, is given by:

$$x = \frac{r^* - r}{\Phi \sigma} + \frac{\sigma_r^2 - \sigma_{rr*}}{\sigma^2}$$

Where Φ is the coefficient of risk aversion, σ_r^2 and σ_{r*}^2 is the respective variances of long-term and short-term flows, and σ^2 is the equal to a combination of the variances. The equation is appealing since it separates the speculative component of short-term flows, the first term, and a component corresponding to the relative riskiness of flow type. Given a capital control, τ, the after-control return on short-term flows, r'^* defined as:

$$(1 + r'^*) = (1 + r^*)(1 - \tau)$$

The imposition of a control (on inflows) on short-term allocation is then given by a reduction in the after-control return on short-term flows. The above equation directs shows how a control generates a wedge between interest rates of short-term flows; according to the authors, this wedge raised central bank independence. According to the above optimality condition for x, imposing a control will also lower the share of short-term flows in the portfolio. Yet, to provide analysis in a general equilibrium framework, the economy must be aggregated. Upon

aggregation of investor wealth and the demand and supply of short-term flows, the authors derive an interest rate differential as a function of these aggregate variables, risk aversion, and flow variance. In aggregate, controls lower the short-term allocation share. Other effects of controls can then be derived in general equilibrium. Depending on the elasticity of short-term flows with respect to total flows, controls either increase, decrease, or generate no change to the level of short-term and total flows.

Manipulating the optimal allocation equation, x, one can show that a percentage point change in the price-based control can generate a specific percentage in the volume of flows. This overly simple result establishes the equivalence between quantity- and price-based capital controls. More analysis here is needed since these two types of controls generate non-trivially different efficiency losses. Since external flows finance a current account deficit entirely in the model. Since controls can reduce total flows, a current account deficit will be reduced, causing a real depreciation.

To analyze an effect of a control on outflows is simply given by a reduction in aggregate investor wealth. The resulting effect is a reduction in the volume of outflows, yet the composition of flows is unchanged. The effects on monetary independence and exchange rates remain the same. Yet, the analysis of outflows is oversimplified and perhaps requires further theoretical clarification. Nonetheless, the study itself creates important implications for the effects of capital controls that currently relies on mainly empirical studies and no unified theory.

Capital Controls, the Current Account, and "Catch-up"

Perhaps some would view such an approach as old wine in new bottles, but a group of economists have formally modeled some of the ideas that could be seen as more in the Keynesian and Structuralist traditions with respect to development. Another new theory has emerged that models the distortion of capital controls in a trade policy perspective. In focusing on intertemporal distortions, Costinot, Lorenzoni, and Werning (2011) derive optimal capital controls which depend on business cycle dynamics and the trade balance. Their model yields the optimal policy mix of either taxing inflows and subsidizing outflows, or taxing outflows and subsidizing inflows. Specifically, in an expansionary period when there is positive growth in output, the optimal policy is to tax inflows and subsidize outflows. Such results have important implications to high-growth economies that are "catching up" with the rest of the world.

Costinot, Lorenzoni, and Werning (2011) presents a simple open economy, two-country model in discrete and infinite time with one good. The authors first derive the optimal trade policy given by the first order conditions, in which an import tax is optimal during a trade deficit and an export tax is optimal during a trade surplus. The model is then extended to an open capital market in which consumers trade one-period bonds subject to a tax on net lending, i.e. the capital control. By comparing the Euler equations of the two models, the authors derive an equation relating the capital control to the trade tariff:

$$1 - \theta_t = \frac{1 + \tau_t}{1 + \tau_{t+1}}$$

Thus, the optimal capital control schedule is obtained from this equation: a tax on inflows and subsidy on outflows during periods of positive growth, and vice versa during periods of negative

growth. Countries that are catching up have many consecutive periods of positive growth, so these economies should tax inflows to encourage domestic savings and shift consumption to subsequent periods.

Costinot, Lorenzoni, and Werning (2011) extend the model to many goods to reinforce their findings in a more realistic model. Interestingly, both the one good and multi-good models have a zero capital control equilibrium. When output growth and output shares are constant, the optimal tax schedule involves zero taxes on capital flows. Yet this policy is due to zero intertemporal trade, which is implausible and hardly optimal. Other extensions include adding a full tax schedule on all goods and dates as well as taxes in both countries, not just the home country. Although optimal tax rates can be computed, the theory relies too heavily on unrealistic assumptions pertaining to a country's incentive to tax consumption and trade flows. Hence, this above framework is questionable and perhaps not ideal to analyze optimal capital controls.

V.   Summary and Conclusions

This paper has shown that capital controls are justified as an important part of the macroeconomic toolkit from a wide variety of theoretical perspectives within economics. This theory runs counter to the claims in the popular press, by some in the economics profession, and by some policy-makers that capital controls are inherently protectionist measures. Capital controls, or capital account regulations as they are beginning to be called by some who seek to remove the unjustified stigma attached to this policy tool, can be justified ways to perform counter-cyclical balance to boom and bust cycles, to maintain monetary independence, and to support exchange rate and financial stability. Controls can be seen as the means to these ends through the Keynesian and structuralist traditions, as well as through neo-classical based theories. Indeed, the newest wave of neo-classical research on the topic would brand controls not as protectionist policies, but as "correctionist" policies that make global capital markets work more efficiently.

One objection to the use of controls that has remained outside of theoretical discussions is the efficacy of controls. Though a full review of this literature is beyond the scope of this paper it is important to note that a mountain of high-level research has recently shown that capital controls have been effective in the 21st century. In a February 2010 Staff Position Note, the IMF staff reviewed all the evidence on capital controls on inflows, pre and post crisis and concluded: "capital controls—in addition to both prudential and macroeconomic policy—is justified as part of the policy toolkit to manage inflows. Such controls, moreover, can retain potency even if investors devise strategies to bypass them, provided such strategies are more costly than the expected return from the transaction: the cost of circumvention strategies acts as "sand in the wheels" (Ostry, 2010). To come to this conclusion, this recent and landmark IMF study reviews the experiences of post-Asian crisis capital controls. The IMF also conducted its own cross-country analysis in this study, which also has profound findings. The econometric analysis

conducted by the IMF examined how countries that used capital controls fared versus countries that did not use them in the run-up to the current crisis. They found that countries with controls fared better: "the use of capital controls was associated with avoiding some of the worst growth outcomes associated with financial fragility" (IMF, 2010: 19). This work has been echoed by National Bureau of Economic Research studies (see Magud et al, 2006; Magud et al, 2011).

These landmark developments in theory and practice can be built upon. Further research and policy is needed within and outside of economics. With respect to the use of national-level capital controls very little work has been conducted on the design and monitoring of effective capital controls. A great deal of research has been conducted on the political economy of controls (see Abdelal, 2009, Helleiner, 1994 cited above) but analyses of the newest wave of controls is still in its infancy. Indeed, a constructivist school of political economy has been examining how economic ideas diffuse into the policy arena (see Chwieroth, 2010 for such an examination of capital controls) and it will be interesting to trace the extent to which the new welfare economics and the resurgence of post-Keynesianism diffuses into the post-crisis policy realm. Finally, research on the extent to which controls should be coordinated globally, beyond the boundaries set by Keynes and White at Bretton Woods is needed. These topics are beyond the scope of this paper. Framing controls as essential for policy autonomy and as market correcting devises however can open new avenues for thought and policy to prevent and mitigate future economic crises.

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