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Governing Finance and Knowledge: An Evolutionary Perspective

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Abstract The paper applies the evolutionary perspective to the emerging field of Global Economic Governance. It does so by showing that the core areas behind the spread of globalization are the exact same one behind Schumpeter's model of economic evolution: finance (credit expansion and financial innovations) and knowledge (innovations in knowledge creation, protection, and diffusion). The paper then argues that those are two key areas that governance-oriented institutional change agendas should address in order to provide a more effective and democratic frame to globalization itself. It concludes by sketching out in, a compressed way, the core issues for reform agendas in governing finance and knowledge.

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1. Introduction

This paper's aim is to apply the evolutionary perspective to the emerging field of Global Economic Governance. It will do so by showing that the core areas behind the spread of globalization are the exact same one behind Schumpeter's model of economic evolution: finance (credit expansion and financial innovations) and knowledge (innovations in knowledge creation, protection, and diffusion). It will also argue that those are two key areas that governance-oriented institutional change agendas should address in order to provide a more effective and democratic frame to globalization itself.

The paper will provide a compressed analysis of globalization's main problems springing from finance and knowledge and a preliminary agenda for institutional reform in both arenas. It will do so utilizing the broader

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evolutionary perspective developed by Schumpeter (the multiple sources of innovation and the interplay of knowledge and finance as core levers for development), Minsky (that capitalism should be understood essentially as a financial system and that markets should be analyzed first and foremost as webs of credit and debt contracts that tend to self-destabilize), Karl Polanyi (the recognition that markets need to be embedded in non-market institutions in order to work efficiently) and the contemporary neo-Schumpeterian thinking on the co-evolution of technology, institutions and economic performance.[1] The paper's main conclusion is that, from an evolutionary perspective, a global economic governance reform agenda is an urgent task and that it should seek to restore both Schumpeterian finance relegated to a stealth position in the current ungoverned financial regime, and Schumpeterian entrepreneurship, substantially deterred by an intellectual property system geared towards rent seeking, rather than innovation. Those would be necessary (although not sufficient) conditions for a more effective and democratic frame to manage globalization both in finance and in knowledge.

Finally, the paper's concerns are primarily directed towards policy and institutional design (regulatory) outcomes, but its main thesis on the necessity for governing finance and knowledge can also be stated from a more theoretical perspective: The case for governance springs from the theory of change which can be labeled an *Evolutionary Theory of Social Change.* It has Darwinian roots but takes heavily into account the Lamarckian dimension of adaptive mutation as well as culture-based elements like the presence of purpose, intelligence and intellectual interaction (cf. Nelson and Winter 1982, Minsky 1990, Laurent and Nightingale 2001, Nelson 2006). Its core elements are variation, selection and retention which can be narrowed down to innovations (the sources of variation), competition (the selection mechanism) and institutionalization/diffusion (the retention process).

The process of change which is propelled by the interaction of those three features is irreversible and characterized by continuous gales of creative-destruction. It always produces winners and losers and is embedded in instabilities with uncertain (not predicable) outcomes. The governance implications of this process for our concerns are straightforward: They suggest that economic and social change is an evolutionary process but *not necessarily a progressive* one. *To become progressive, change has to be governed*. In other words, it implies that "creative-destruction manage-

[1] A useful plea for broadening the evolutionary agenda towards the realm of finance can be found in Hanusch and Pyka 2006.

ment" is at the heart of both effective economic change as well as of social justice – or progressive social change (cf. Burlamaqui 2000, 2009).

2. Globalization and global economic governance

From an economic point of view, globalization can be defined as a process associated with increasing economic openness, growing economic interdependence and deepening economic integration among countries in the world economy (Nayyar 2002, Scholte 2005, Weinstein 2005, and Frieden 2006). Globalization itself is not a new phenomenon, but it entered a new phase since the mid-1980s. This new phase is deeply rooted in a technological revolution, as was the previous phase. Its main elements are a huge expansion of markets (especially of financial markets), challenges to State sovereignty and to established institutions and social values, the rise of new social actors and political movements, and an increased level of global instability (Underhill 1997, Underhill and Zhang 2003, Michie and Smith 1999, Gilpin 2000, and Nayyar 2002). However, globalization also presents enhanced economic opportunities for countries, corporations and individuals who are capable of strategically positioning themselves towards these changes.

The new global landscape includes actors empowered by globalization like global corporations, global private financial institutions and global civil society associations. It is also shaped by the proliferation of semi-official and non-official rule-setting bodies and regional agreements. The main challenges to brought by globalization to established institutions and to the social fabric are coming from technological and institutional creative destruction, and their intended and unintended consequences: new general purpose technologies, cross-border financial deregulation and growing financial instability, the deepening knowledge divide, cross-border tax evasion, mass migration, trafficking in drugs and arms, environmental degradation, rising terrorism, and religious fundamentalism, as well as the proliferation of all sorts of illegal networks (cf. Woods 2000, and Held and Mc Grew 2004).

From an economic policy perspective, the Keynesian approach that "the whole is greater than the sum of its parts" has been replaced by the Neo-liberal view that only individual incentives can produce efficient results, a doctrine dubbed the "Washington Consensus" which has as its central assumption the superiority of market-based over governance-based solutions, and a strong bias against State intervention.

From a global governance perspective, both the United Nations and the Bretton Woods institutions are now more than sixty years old and have changed little since their inception. On the other hand, both the world

economy and global geo-politics have changed almost beyond recognition since 1945, compelling researchers, policy-makers and activists to break new ground both in their analysis and their strategies to bring about "progressive social change" (cf. Albrow 1996, Gilpin 2000, Frieden 2006, and Rodrik 2007).

The relationship between globalization and global governance is, therefore, an unbalanced one. Since the global financial crisis of 1997-2002, it became quite clear that what we have in place are "global markets without global governance," a statement that was certainly reinforced by the collapse of the Doha round in July of 2006 and made crystal-clear by the implosion of wall-street in the summer of 2007. In the realm of global economic governance institutions, this vacuum is especially serious in the areas of finance and knowledge (cf. Rodrik 2005, 2007, Drahos and Braithwaite 2002, Benkler 2006, El Erian 2008 and Soros 2008).

The common problems that link these two areas together are i) the emergence of new, unmapped and poorly-understood "landscapes;" ii) the development of governance regimes which transcend national borders but are largely autonomous sites of power, making them undemocratic and unaccountable; and iii) the institutional underdevelopment and lack of coordination among these governance bodies which makes them ineffective.

3. Finance and financial governance

To explain the centrality of the problems arising from financial globalization and to reclaim financial governance, I will briefly turn to Minsky's "Wall Street Paradigm." Building on Keynes's and Schumpeter's ideas, Minsky's analysis, based on the relationship between credit/debt structures and investment expending, defines three balance sheet configurations: hedge, speculative and Ponzi. The Ponzi structure is one that emerges when economic units need to increase their borrowing just to "stay in business," but to which, according to the aphorism and good credit assessment, bankers should not lend under any circumstances (cf. Kregel, 1997, which extends Minsky's analysis to exchange rates and it to the Asian crisis).

The macro-financial implications of that vision is that every economic unit – firms, households, governments and even countries – becomes essentially the analog of a bank, daily balancing cash inflow against cash out flow (cf. Minsky 1978, Mehrling 1998). From that point of view, categories such as production, consumption, trade and investment are first of all flows of money, assets and liabilities, exchanged between different economic agents. To put it as Keynes did, *money and finance are the most real aspects of capitalism*, the ones from everything else springs.

From that perspective, credit is the most crucial device. Credit allows these agents to acquire assets whose expected cash-flows will exceed their cash commitments. But that may not happen and liquidity crunches will result. Minsky's financial fragility is the route towards this possible outcome. "Fragile finance" refers to profiles of economic units (or of the whole economy) where cash commitments are relatively heavy compared to cash flows so that there is danger of widespread failure to meet commitments and, consequentially, of breakdowns.Financial fragility surfaces as an endogenous feature of capitalist economies, springing from the connections between indebtedness and uncertainty. Generalized liquidity preference develops, financial markets freeze, and serial insolvencies and bankruptcies are their possible "worst case outcomes."

The central idea behind Minsky's hypothesis of endogenously evolving financial instability is that the safety margin of risk in financial transactions gradually erodes in a climate of economic boom due to an overoptimistic view of its durability. To this, we can add another hypothesis, that by using risk assessment algorithms to evaluate creditworthiness, financial institutions and money managers systematically mistake uncertainty for risk, and, therefore, attribute predictability to unpredictable events**.**

The central implication of this perspective for global economic governance is that left to its own devices, the inherent herd behaviour built in systems based on expectations about an unknown future produces a financial system that operates to amplify rather than to reduce its propensity towards both financial fragility and financial instability.[2] Here financial governance and financial regulation enter the scene. In order to "stabilize an unstable economy," governments and global governance institutions would be the prime candidates, willing to act as global prudential regulators, overseeing global capital flows, structuring pools of global liquidity and as rule enforcers for both creditors and debtors, besides their function of setting standards.

However, the institutional evolution of capitalism since the 1980s has followed almost the opposite course: sweeping financial deregulation and anti-government campaigns, a blind faith in privatization, and an obsession with balanced budgets and inflation targeting as the centrepiece of standard macro-economic policy. Full-blown financial deregulation enabled the derivatives' revolution to take off, and increased financial volatility followed suit.[3] The global financial crisis that shook the world during 1997-

[2] From that angle, markets should be understood as first and foremost institutional-legal constructs, not purely economic or "natural self-regulating" entities. The (Polanyian) implication here is that they have to be *built* and *governed*.

[3] A chronology of the financial disturbances of the past 25 years would include: Mexico's debt crisis: 1982, U.S. Black Monday: October 19, 1987, United Kingdom's Black Wednes-

2002 (across Asia, Russia, Latin America and Turkey) opened a window for thinking about a "new financial architecture."[4] But as the debate moved to consider instruments like reintroducing capital controls or building a 'world financial authority', it was kept almost entirely inside academic departments and a few engaged NGOs (cf. Eichengreen 1999, Eatwell and Taylor 2000, and Blustein 2001, 2005). In this vacuum of effective global financial governance institutions, a cluster of new and little-known agreements and unofficial or undemocratic organizations have developed.

Representatives of developed country financial market regulatory and supervisory agencies have been drawing up a set of best practice standards and codes whose adoption is being encouraged through peer pressure or through conditions attached to IMF lending programs or Article IV surveillance. Indeed, the credit worthiness of individual countries' liabilities is now judged by the quality of individual countries' regulatory and supervisory systems as measured by their adherence to these international standards. It has become crucially important for developing countries to be seen to be adhering to these standards as a minimum condition for attracting and retaining international capital flows. The Bank of International Settlements and the Basel Committee[5] gained much more preeminence in the G7 thanks to the new Basel II accord (2001).[6] A weakened IMF proceeded to create a host of ad hoc country based - instead of globally structured - surveillance devices[7] (cf. Sinclair 2005).

Additionally, various standards have been also promulgated by the World Bank, the OECD, and a whole gamut of unofficial bodies that include the International Accounting Standards Board, the International

day: 1992 (The Soros crisis), Mexico's exchange rate crisis: 1994-95, Asian financial crisis of 1997, Russian financial crisis: 1998, Brazilian exchange rate crisis: 1999-2000, U.S. Dot-com bubble crash: March 2000, Argentinean debt crisis: 2000-01, U.S. post-9/11 crash: September 2001 plus Stock market downturn of 2002, Iranian stock market crisis - 2005-ongoing, The Chinese Correction (Chinese market drop): February 27, 2007, and the current financial crisis (Summer 2007-?).

[4] Besides countless debates among academics and policy makers Sakakibara's efforts to build an Asian equivalent of the IMF deserve to be noted.

[5] The Basel Committee, established by the central-bank Governors of the Group of Ten countries at the end of 1974, meets regularly four times a year. It has four main working groups which also meet regularly.

[6] In January 2001 the Basel Committee on Banking Supervision issued a proposal for a New Basel Capital Accord that, once finalized, will replace the current 1988 Capital Accord. The proposal is based on three mutually reinforcing pillars that were supposed to allow banks and supervisors to evaluate properly the various risks that banks face. Its flawed nature was fully revealed by the current financial crisis as I will argue below.

[7] Like the ROSCs - reports on the observance of standards and codes, and the SDDS - special data dissemination standards and the FSAP - the financial sector assessment program).

Federation of Accountants, the International Organization of Securities Commissions, the Financial Action Task Force on Money Laundering, the International Association of Insurance Supervisors and International Federation of Stock Exchanges (cf. Carvalho and Kregel 2007, Wade 2007).

There are several governance-related problems with this emerging financial patchwork. The Bretton Woods twins (The Fund and the Bank) are loosing power and influence by the day and were never "global" institutions but rather creditor's watchdogs. They were not meant to ensure stability of the financial system, only of the exchange rate system in support of free trade. Their move into financial stability is just mandate creep. As for the expanding unofficial bodies, e.g. the International Association of Insurance Supervisors and International Federation of Stock Exchanges, they exacerbate both the lack of coordination and democratic deficit in global economic governance. By and large "standards setting" bodies, these organizations are, opaque, and accountable only to themselves. Their ultimate accomplishment was to impose a hands-off one size fits all set of rules which has shown to have deleterious effects in both developed and developing countries.

On the financial markets side a cluster of financial innovations - CDOs, SIVs, MBSs (plus a whole alphabet soup of highly complex instruments) - thrived without being bothered by any of the major national regulatory agencies. The derivatives market alone, another set of complex, unregulated and potentially destabilizing set of operations has reached $ 574 trillion by the end of 2007.[8] In this new financial landscape, business was reshaped by a reckless massive borrowing which is unseen, unregulated and little understood. Because of increased complexity associated with lack of transparency and poor regulation, policy makers could not see whether these volatile new debt and private equity instruments are in safe hands or how they will behave in a crisis when everyone is heading for the exits. Now they can.

The financial crisis which was triggered by the Bear & Sterns collapse in March 2008 and exploded with the fall out of Lehman Brothers has already committed half of the Fed's reserves for cash loans (around $ 400 bn) and could pile as much as $ 2000 billions in losses gave concrete evidence of all those flaws (cf. Financial Times 05/30/2008).[9] The crisis revealed a new financial system (and a "shadow" banking system) where credit rating

[8] OTC derivatives outstanding were by the end of 2007 $ 574 trillion. cf. http://www.bis.org/statistics/otcder/dt1920a.pdf. Global GDP is around $41 trillion. Another side of this heavily derailed set of financial rules is that the top hedge fund managers had an "average" annual earning of around $ 360 millions (New York Times 5/22/07).

[9] Estimates of Wall Street's total losses are already running well up to $ 500 bn (cf. Faux 2008).

agencies replaced the bank's knowledge of the creditworthiness of their borrowers, while market discipline replaced regulation. In addition, the extensive application of Basel minimum capital standards, since 2004, encouraged banks to continue to increase their fee and commission incomes by moving lending to unrelated affiliates and off their balance sheets (cf. Sinclair 2005, Kregel 2008, and Soros 2008).

Summing up: We now have in place is a financial system where the whole institutional structure for setting margins of safety was made "Ponzi by design."[10] In that regard, the "new financial system" is one in which, following Minsky's approach, there was no evolution from Hedge to Speculative to Ponzi. Instead, it was Ponzi finance at the staring point.[11]

Minsky, once more, he was ahead of the curve. In a paper written almost two decades ago, and presented to the 12th Congress of the ISS, he argued that "Schumpeter's banker financed the creative part of creative destruction….the schumpeterian [banker] is not our own day's master of the corporate raid and the leveraged buy out" (cf. Minsky 1990: 56). What he was foreseeing has now become completely evident: The financial system lost, almost completely, its connections with the goals of productivity enhancement, employment creation and development.

From an evolutionary perspective, recasting Schumpeterian finance and the Schumpeterian kind of banker has to be at the center of any meaningful financial governance reform agenda. I will revisit the theme in the conclusion of the paper.

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[10] "This system has produced a new form of bank operations now known as 'originate and distribute,' in which the bank seeks to maximize its fee and commission income from originating assets, managing those assets in off balance-sheet affiliate structures, underwriting the primary distribution of securities collateralized with those assets, and servicing them. Under this system, the banker has no interest in credit evaluation, since the interest and principal on the loans originated will be repaid to the final buyers of the collateralized assets. The deterioration in cushions of safety caused by the evolution of the bank's evaluation of the borrower's credit risk through periods of stability plays no role here" (Kregel 2008: 11).

[11] A more blunt assessment along the same lines is given by Faux (2008): "Giant Ponzi scheme? Not to worry, responded the Wall Street geniuses. By spreading risks among more people, the miracle of 'diversity' was actually turning bad loans into good ones. Anyway, banks were buying insurance policies against default, which in turn were transformed into a set of even murkier securities called 'credit default swaps' and marketed to hedge funds, pension managers and in some cases back to the banks that were being insured in the first place. At the end of 2007 the market for these swaps was estimated at $ 45.5 trillion - roughly twice as large as all US stock markets combined. This huge pyramid of debt was made possible by thirty years of relentless deregulation of financial markets, culminating in the 1999 repeal of the Glass-Steagall Act, which had prohibited banks from dealing in high-risk securities. In effect, Washington regulators became passive enablers to Wall Street's financial binge drinkers."

4. Knowledge and knowledge governance

Knowledge - especially technology and innovation - is the second main driver behind globalization and the main lever for the achievement of economic development (cf. Schumpeter 1934, 1942), but also of social justice, cultural enhancement and true democracy (cf. Benkler 2006). As we dive into an increasingly knowledge-intensive economy and society, were knowledge and information become the strategic and transforming resources of society (cf. Bell 2001), it also becomes clear that knowledge governance should be at the center of a global economic governance agenda.

Knowledge is embodied in books, journals, equipment, technological and social innovations and, especially, in the human mind. It diffuses through society via investments and the result is development and structural change. As Schumpeter pioneered to show, modern capitalism has proved a remarkably powerful engine of technological progress (cf. Schumpeter 1942: Part 2). Until very recently, most of the attention to its workings has focused on the business firms and entrepreneurs, operating in a market setting, who are the central actors in developing and introducing new products and processes.

Now it is widely recognized that the power and speed of invention and innovation is increasingly dependent on the strength of the science base from which they draw. This science base largely is the product of publicly funded research, and the knowledge produced by that research *used* to be largely open and available for potential innovators to use. That is, market dynamics used to rest on a publicly supported *scientific commons: Ideas could never be owned* (cf. Nelson 2003, Boyle 2004, and Ruttan 2006).

However, as markets and corporations went global a paradox has developed. In total contradiction with the *globalizer's* ideology of "free movement of goods, capital and ideas," intellectual property *rules* and agreements became much more restrictive as well as their enforcement mechanisms such as the Trade-related Aspects of Intellectual Property agreement included in the WTO (Trips) and Trips-plus. More precisely, intellectual property rules and regulations became the center of knowledge governance. They are the legal sinews of the information age; they affect everything from the availability and price of AIDS drugs, to the patterns of international development, to the communications architecture of the Internet (Boyle 2004).

From an evolutionary perspective, or in the context of Schumpeterian competition, intellectual property rights (IPRs) - patents, trade secrets, confidentiality contracts, copyrights, trademarks, and registered brand names - are powerful, strategic weapons for generating sustained competitive advantages and Schumpeterian and Ricardian rents (cf. Jolly and

Philpott 2004).[12] In the evolutionary economics framework, it is quite clear that in the absence of legal protection for an invention, the inventor either will have less incentive to innovate or will try to keep his invention secret, thus reducing, in both cases, the stock of knowledge to society as a whole (Landes and Posner 2003: 294).

From an entrepreneurial perspective, as well, patents and other IPRs are extremely effective means to reduce uncertainties - and therefore, to ignite the animal spirits and long-term expectations - through building temporary monopolies around products, processes, market niches, and, eventually, whole markets (Burlamaqui and Proença 2003, Nelson 1996). However, the word *temporary* is crucial here because of creative destruction: As Schumpeter stated long ago, "A monopoly position is in general no cushion to sleep on" (1942: 102).

But the picture can get much more complicated as we examine the details. Dynamic inefficiencies can easily arise from a too strictly - and privately - regulated IPR regime. Let's consider three possibilities were the case for knowledge governance reform emerges quite strongly.

Firstly, as Arnold Plant, an almost forgotten analyst in the field, observed in the early 1930s: "In the case of physical property, the institution of private property makes for the *preservation of scarce goods* … In contrast, property rights in patents and copyrights make possible *the creation of scarcity* of the products appropriated … *The beneficiary is made the owner of the entire supply of a product for which there may be no easily obtainable substitute*" (Plant 1974 [1934]: 65-67, emphasis added). In sum, an over- protective intellectual property rights regime can easily give rise to dynamic inefficiencies,[13] and that alone leaves ground for a different set knowledge governance policies to enter the scene, as we will see shortly.

Secondly, the broader the patent protection (and IPRs, generally), the less the patentee's competitors are able to benefit from the patent by "inventing around," or innovating on the shoulders of, the patent- (or copyright-) holder. Broad IPRs are, thus, bound to exacerbate the dynamic efficiencies that Plant and others have observed. Accordingly, especially given the complexity and diversity of patents and other IPRs, a one-size-fits-all prescription seems ill-advised. Here, again, knowledge governance reform surely have a place in limiting IPR scope, as well.

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[12] Having said that, it is striking how little has been written about the crucial connection between Schumpeterian competition and IPR. And, of course, I include myself in that loophole. In that regard, legal theorists like Landes and Posner or Benkler are clearly ahead, in the sense that they are already doing the reverse track - using Schumpeterian concepts and insights to deal with IPR (cf. Landes and Posner 2003, Benkler 2006).

[13] Meaning the expected (negative) impact on future incentives for competitors to compete (innovate) and future consumer welfare.

Thirdly, from a global outlook an even more worrisome scenario can be outlined. If we think of knowledge production and innovation as cumulative processes where cutting edge knowledge and know how rests on previous ones and of stronger patents and IPRs in general as "fences" erected to privatize and protect them it's not difficult to figure out the inevitable tension and potential trade-off between the private and public dimensions of IPR rules. The tradition of intellectual property as a thin layer of rights around a carefully preserved public domain was replaced by a practice where the public domain should be eliminated whenever possible (cf. Boyle 2003).

There are two halves to this "second enclosure" movement. The defensive side focuses on government-backed corporate strategies for intensifying the enforcement of protected monopoly rights to exclude others from using information that has been defined as private property. The offensive side involves strategies for taking information that has been considered part of 'nature' or the commons cultural and informational heritage of humankind and transforming it into 'private property' (cf. Evans 2005). The success of both halves of this movement is leading to a global re-distribution of property as well as to deepening the knowledge divide.

If we take this arguments seriously, what we see emerging is a mix of global *knowledge monopolies*, preclusion of assess to new knowledge and privatization of traditional common knowledge.[14] However, an ever increasing privatization of knowledge at the expense of the public domain is not the only way forward. In the past decade, however, there has been growing recognition on the part of many civil society organizations, academics, developing countries, and, most surprisingly, large numbers of commercial organizations that the drive to ratchet up intellectual property, to harmonize the law everywhere, irrespective of state of development, and to do so through the trade system has worked to the detriment of human

[14] A frightening example of preclusion of assess to new knowledge comes from Biotech: Gene patents are now used to halt research, prevent medical testing and keep vital information from us and our doctors. Gene patents slow the pace of medical advance on deadly diseases. And they raise costs exorbitantly: A test for breast cancer that could be done for $1,000 now costs $3,000.Why? Because the holder of the gene patent can charge whatever he wants, and he does. Humans share mostly the same genes. The same genes are found in other animals as well. Our genetic makeup represents the common heritage of all life on earth. We can't patent snow, eagles or gravity, and we shouldn't be able to patent genes, either. Yet by now one-fifth of the genes in our bodies are privately owned. On the privatization of common traditional knowledge, the striking example comes from a recent U.S Patent and Trade Marks Office measure: It just issued 150 yoga related copyrights, 134 patents on yoga accessories and 2,315 yoga trademarks. The Indian government is not laughing (cf. Crichton, Patenting Life in The New York Times 2/13/07).

development, as well as innovation in all but a narrow range of fields, most prominently pharmaceuticals.

What started out as disparate ideas, concerns, and movements - access to medicines; information commons; Internet freedom; open spectrum; ICTs for development - have increasingly moved to an international and development focused political drive - be it the shift from Creative Commons and its international version, iCommons, or the emerging global A2K movement (cf. Benkler 2008). Alternative modes of knowledge governance like these deserve more attention and development. Notwithstanding, a knowledge governance *system* committed to development needs of emergent and poor countries, to close the knowledge gap and to restore the balance of public domain and private interests has yet to develop.

5. Financial governance reform: a draft agenda

In the 12th chapter of the General Theory, Keynes argued that "when the capital development of a country becomes a byproduct of the activities of a casino, the job is likely to be ill done" (cf. Keynes 1936: 116). Securitization-based hedge-fund capitalism took Keynes's statement to a whole new level, where financial governance is almost non-existent and markets are not self correcting, but highly self-destabilizing devices which, by contagion, spread instability and volatility to the rest of the system. What is to be done? The debate on financial governance and re-regulation sparked by the current crisis is just beginning and will be around for a while, but there are already some lessons to which parliamentarians, policy makers, regulators and central bankers should be paying attention. Alan Blinder, Martin Wolf, Nouriel Roubini, and Elizabeth Warren proposal's are among those who have captured some of the key lessons. I will quote them extensively in order to sum up the proposals.

Firstly, perhaps the most obvious lesson is the dangers of regulatory arbitrage: If the rules required certain capital requirements, institutions shifted activities into off-balance-sheet vehicles; if rules operated restrictively in one jurisdiction, activities were shifted elsewhere; and if certain institutions were more tightly regulated, then activities shifted to others. Regulatory coverage must be complete. All leveraged institutions above a certain size must be inside the net (cf. Blinder 2008, Wolf 2008).

Secondly, leverage. High leverage means owning a lot of assets with only a little capital. This is where something fundamental changed on March 16. Before that day, only banks had access to the Fed's discount window; broker-dealers took large risks without a safety net. But everything changed when the Federal Reserve became the lender of last resort to selected securities dealers. Because securities firms are now under the Fed's protec-

tive umbrella, they must start operating as safely and soundly as banks. That means both closer supervision and less leverage (cf. Blinder 2008).

Thirdly, cushions. Equity capital is the most important cushion in the financial system. Also helpful is subordinated debt. Capital requirements must be the same across the entire financial system, against any given class of risks. But there must also be greater attention to the adequacy of that other cushion: liquidity. Poor liquidity risk management and the risk of bank-like runs on non-bank financial institutions has been shown as a severe problem in the shadow financial system (cf. Wolf 2008, Roubini 2008).

Thus, an essential element of the common regulation of all non-bank financial institutions should be a greater emphasis given to the management of liquidity risk. Such firms should be asked to significantly lengthen the maturity and duration of their liabilities in order to reduce their liquidity risk. A firm that makes money only because it borrows very short, has little capital, leverages a lot and lends long and in illiquid ways is reckless in its risk management. It should certainly disclose fully to supervisors and to investors the liquidity and other risks that it is undertaking. But it should also be required to reduce its liquidity risk with a variety of tools provides it with a greater liquidity buffer (cf. Roubini 2008).

Fourth, commitment. The originate-and-distribute model has, it is now clear, a huge drawback: Originators do not care sufficiently about the quality of loans they plan to offload on to others. They do not, in Warren Buffett's phrase, have "skin in the game." That makes for sloppy, if not irresponsible or even fraudulent lending. Originators should be required, therefore, to hold equity portions of securitized loans (cf. Blinder 2008, Wolf 2008).

Fifth, the BIS and Basel II. Even before being fully implemented the Basel II agreement has shown its flaws: Capital adequacy ratios that are pro-cyclical and thus inductive of credit booms in good times and credit busts in bad times; low emphasis on liquidity risk management; excessively low capital ratios given the risks faced by banks; excessive reliance on internal risk management models; excessive importance given to the rating agencies. In reforming Basel II, Particular importance should be given to measures that would reduce the pro-cyclicality of capital standards; and to measures to increase - rather than decrease - the overall amount of capital held by financial institutions as recent history suggests that most financial institutions were vastly undercapitalized given the kind of market, liquidity, credit and operational risks that they were facing in an increasingly globalized financial system (cf. Roubini 2008).

Sixth, Rating agencies. By now the conflicts of interest and informational problems that led the rating agencies to wrongly rate – many MBS and CDO and other poorly understood financial innovations products as

highly rated are well known and recognized. With a large fraction of their revenues and profits coming from the rating of complex structured finance products and the consulting and modeling services provided to the issuers of such complex and exotic instruments it is clear that rating agencies are ripe with conflicts of interests. Dilip Abreu suggests paying ratings agencies with some of the securities they rate, which they would then have to hold for a while. Blinder's idea is to have a public body, like the S.E.C., hire the agencies, paying the bills with fees levied on issuers (cf. Roubini 2008, Blinder 2008).[15]

Seventh, the creation of a financial product safety commission. "Financial products should be subject to the same routine safety screening that now governs the sale of every toaster, washing machine, and child's car seat sold on the American market" (cf. Warren 2007). Like its counterpart for ordinary consumer products, this agency would be charged with responsibility to establish guidelines for consumer disclosure, collect and report data about the uses of different financial products, review new financial products for safety, and require modification of dangerous products before they can be marketed to the public. The agency could review mortgages, credit cards, car loans, and a number of other financial products, such as life insurance and annuity contracts. In effect, the FPSC would evaluate these products to eliminate the hidden tricks and traps that make some of them far more dangerous than others (cf. Warren 2007: 16). This actually points to a broader issue on the regulators' side: It became clear that they need to get a much better understanding of recent financial innovations, and they ought not to allow practices that they do not fully understand (cf. Soros 2008: Chapter 8). There is an emerging consensus- including many market makers such as James Dimon and Soros himself - that the idea that risk management can be left to market participants is an aberration.

Eighth, much closer international cooperation and coordination among the world's major financial regulators is needed. Today's level of international cooperation is wholly inadequate to the need. Perhaps the current worldwide financial crisis will finally persuade the world's financial regulators that lip service is not enough (cf. Blinder 2008). It will take time, but once in place, those reforms would pave the way for the return of Schumpeterian finance where banks and other financial institutions with proper monitoring and plenty of skin in the game, will certainly have more incen-

[15] To that respect, Germany's Prime Minister Angela Merkel's call for a eurozone ratings agency and her remarks that "Continental Europe should take the lead in devising new rules for financial markets, because the Anglo-Saxon model of regulation has failed" should be given attention as well (cf. Merkel Interview to the Financial Times 6/11/08).

tives to go back to the business of financing "the creative part of creative destruction."

6. Knowledge governance reform: a draft agenda

Knowledge governance reform should seek to build institutions and shape markets in order to build a more effective, democratic and equitable knowledge ecology. From an evolutionary perspective, such knowledge ecology should be based on a more cooperative set of institutional arrangements where commons-based, peer production and open source architectures would led the way for a more effective way to generate and diffuse knowledge and innovation (cf. Benkler 2008, Burlamaqui 2009).

Competition policies and creative-destruction management are the major tools available here. From an evolutionary perspective, competition policies should not be about interfering with consolidation or preventing "market power" but should be about preventing "too secure monopolies" - and especially those not based in, and thriving on, higher productivity and superior technological performance.

Firstly, competition policies should shape markets and drive firms toward establishing research coordination, pushing common standards, preserving multiple sources of experimentation, monitoring patent pools, establishing variable patent and copyrights terms, and severely punishing both "unproductive patenting" behaviour and attempts by firms to close markets through creating their own proprietary, closed systems (cf Burlamaqui 2009).

Secondly, competition policies should be crafted to deal, first and foremost, with dynamic market inefficiencies. Plant argued that patents can make the beneficiary "*the owner of the entire supply of a product for which there may be no easily obtainable substitute*," a troubling claim. A clever, but not radical, innovation (e.g. Post It® notes from 3M) should not raise major concerns among policy-makers dealing with competition issues. But what about a nascent general-purpose technology, e.g., the new genetic engineering research tools or a particular DNA sequence? Then Plant's point would hold completely, and the granting of the patent would create substantial monopoly for the owner - and potentially prevent others from exploiting it - thus slowing the diffusion of a new innovation.

In cases like those involving general-purpose technologies, the IPR policy should be much more rigorously examined and carefully constructed. A possible "tool" for dealing with that would be for the government to claim a *golden share* in the IPR system (especially patents

and copyrights, but also trade secrets) by which it would be able to convert a property right previously granted[16] into a general public license should the owner refuse, after establishing his first-mover advantage,[17] to behave cooperatively, and license broadly and fairly.[18] In sum, radical innovations - and, especially, general-purpose technologies - should be subjected to a special IPR regime in which the government's administrative guidance should be able, if needed, to "shape" the market toward a more competitive institutional design (away from too secure monopolies).

A legitimate, and fair, reason to do so is that, according to some recent studies, the U.S. government played a decisive part in the development of virtually all general-purpose technology, from interchangeable parts and mass production to Darpa[19] and biotech (cf. Ruttan 2006, Weiss 2007, Block 2008). Having financed the bulk of the basic R&D that enabled the emergence of champions such as Colt, Boeing, General Electric, IBM, and a whole host of high-tech giants in hardware, software, and biotech, it would not be unreasonable for the U.S government to have a stronger role in granting that technological achievements don't remain overly protected and scarcely diffused (cf. Roland 2002, Fong 2000).

Although in other countries the privatization of publicly generated knowledge is not as acute as in the contemporary U.S, the U.S. PTO is certainly setting standards for everyone else. The way we have it now, it is "public virtues, private vices," an inversion of Mandeville's dictum.

Thirdly, given both the complexity and diversity of patents and IPRs, in general, a one-size-fits-all prescription is certainly not the best way to handle the matter. The 20-year length of a patent (or the terms of copy-

[16] That is, a *legally enforced* temporary monopoly.

[17] Meaning: Being able to recover his costs, establish a robust competitive advantage, and enjoy a sizable profit stream, but not be able to exclude others from using and inventing around his innovation, or protect its diffusion. Taking as an example the Microsoft case, the battle shouldn't be about "breaking" the company. The golden share would allow the government to force Microsoft to publish its source code. An open code would quickly get cleaned up and improved, consumers would benefit, and new entrants would probably arise helping ignite the innovation race and dislodging Microsoft from its monopoly position while preserving the company's market power and ability to innovate.

[18] In fact, this is already in the EU Competition Commission's radar. Its chief, Neelie Kroes, has recently argued in a speech that "industry standards for technology could be based on either proprietary or non-proprietary technologies, but when a market developed so that a proprietary technology became a *de facto* standard and the owner of that technology exploited that market power, competition authorities might have to intervene. One remedy would be to require to disclose of information at 'fair rates' so that other companies could design compatible products and systems" (cf. Financial Times 6/11/08).

[19] DARPA is the Defense Advanced Research Projects Agency, the central research organization of the United States Department of Defense. It's most radical innovation was the Internet (known first as "DARPA-Net").

rights and registrations) is certainly not a "scientifically established outcome" (cf. Landes and Posner 2003). It is, rather, a convention: That is, an institutional-legal construct that, as such, can very well be questioned and changed.[20] Conversely, as Jaffe and Lerner adduce (very much in line with the market features approach[21]): "[i]n the world of theoretical patent analysis, it is easy to show that the attributes of patent protection should vary depending on the characteristics of the technology" (cf. ibid. 203).

To be less abstract on the matter, let me propose this broad guideline for competition policies on IPRs: The length and breadth of patent protection, as well as innovations protected by copyrights, like software, should be linked to the expenditures in R&D, made or to be made,[22] by applicants. Thus, big research budgets (in terms relative to the firm's size) would, in principle, qualify better than "historical accidents" to earn legitimate protection. This would enable them to cover their costs but not to expand their market power indefinitely. Instead of one size fitting all, we would have something like - paraphrasing Rodrik - "Many recipes under the same rule."[23]

Fourth, the "information feudalism" or "second enclosure movement." This movement is seen by the so-called "progressive IP lawyers," software programmers, and a sizable number of social and natural scientists of various extractions as a recipe for global monopoly, one that is likely to stifle innovation at the same time it concentrates wealth. (cf. Drahos and Braithwaite 2002, Moglen 2003, Benkler 2003, and Evans 2005.) A number of commentators have called for an alternative to this second enclosure, an

[20] As a matter of fact, a century ago, copyrights lasted for 14 years - and could be extended another 14 if the copyright holder petitioned for an extension. Today, corporate copyrights last for 95 years, while individuals retain copyrights for 70 years after their deaths. There was nothing "scientific" to back these changes, but rather the powerful lobby of the entertainment industry. As for patents, mind the reader that both in Switzerland (between 1850-1907) and in the Netherlands (between 1868 and 1912), industrialization occurred without enforcement of patent laws (cf. Schiff 1971).

[21] For a further elaboration of the "Market Features Approach" and its relation to competition policies, see Burlamaqui (2008: Section 3 and 4).

[22] R&D expenses as a percentage of the applicant's sales or assets, assuming that those R&D-intensive industries are also the ones bearing more fixed and sunk costs, plus, near-future planned expenses tied to the "birth" of an innovation or technology should be in the contract granting the rights and their actual production of the enabling mechanism to conclude the exam. Otherwise, patent pending would be a sort of "reasonable doubt" proviso.

[23] A very difficult, emerging theme here is the protection to be given to traditional knowledge: DOC (Denominacione de Origine Controllata certifications that grant monopolies based on regional know-how and capabilities, like Champagne versus sparkling wines) issues and related others. We acknowledge its importance but will not deal with that in this paper.

alternative they term "the new commons."[24] As Evans has aptly put it, this alternative is "attractive both because of its distributional implications and because of its potential for raising the rate of innovation and value creation" (2005: 3). The basis of the new commons comes from a redefinition of "ownership:" From the focus on the right to exclude to the focus on the *commitment to distribute* (disseminate).

The key idea here is that once property rights are redefined along the lines pioneered by the open-source-software movement, a much more egalitarian redistribution of intangible assets and a more powerful rationale to foster innovations will be able to emerge. This rationale is one that unfolds from the characteristics of the networked information economy - an economy of information, knowledge, and culture that flows over a ubiquitous, decentralized network. In that environment, as Benkler remarks, productivity and growth can be sustained in a pattern that differs fundamentally from the industrial information economy of the 20th century in two crucial characteristics. First, non-market production can play a much more important role than it could in the physical economy. Individuals working alongside firms can make a real difference in the creation of innovative solutions and productivity gains (Benkler 2003, 2006).[25] Second, radically decentralized production and distribution, whether market-based or not, can similarly play a much more important role by increasing the diversity of ways of organizing production and consumption and, therefore, by increasing the sources and possibilities for multiple forms of experimentation.

This is clearly a global issue and - because of its global scope, and also due to the under-theorized relationship between competition policies and intellectual property rights - a very difficult one to handle. It will certainly require the active involvement of governments, as well as much more international cooperation, in encouraging and assisting the development of open-source systems to move society toward more general-public-licenses-oriented IPR regimes. It will also require comprehensive reforms of both WIPO and the WTO, a very turbulent matter from a power-politics

[24] A "commons" is a piece of land over which people can exercise certain traditional rights in common, such as allowing their livestock to graze upon it. Older texts use the word "common" to denote any such right, but more modern usage is to refer to particular rights of common, and to reserve the name "common" for the land over which the rights are exercised. By extension, the term "commons" has come to be applied to other resources which a community has rights or access to.

[25] And, he adds, one can clearly observe this behavior by noticing that most of what we do on the Internet runs on software produced by tens of thousands of volunteers, working together in a way that is fundamentally more closely related to a community than to a hierarchical big corporation standing alone.

perspective. Nevertheless, the recent deliberations of the EU Competition Commission (see note 19 above), and the decisions by IBM and Nokia, for example, to put part of their patents into the public domain suggests that there is perhaps more room to maneuver than the skeptical analyst might expect.

Lastly, patents and intellectual property in general are too important to be left to lawyers, juries, and a single PTO. They should be institutionally restructured, in the form of a cross-cutting knowledge governance agency working in coordination with the other regulatory bodies, where field experts from specific agencies would get training in IP issues in order to become examiners. Dedicated judges and courts (but not juries) should be the "last resort" in those matters, not the first Additionally, this agency should structured along Weberian lines - a set of offices in which appointed civil servants operate under the principles of merit selection, expertise, a flat hierarchy, exclusive employment, career advancement, and legality. This type of rationality (Weber's key term) would increase speed, scope, predictability, and cost-effectiveness (cf. Weber 1922: 124-130).

From an evolutionary-policy perspective the key issue to deal with is how to separate innovation-rooted profits, which should be rewarded but understood as windfalls (dependent on continuous innovation), from legal monopoly-granted rents, which should be eliminated or, at least, closely monitored and curtailed. Working along those lines, a successful knowledge governance reform will most likely restore the role of true Schumpeterian entrepreneurship at the expense of IP *rentiers.*

7. Conclusion

To conclude, let me underline that, from an evolutionary perspective, global economic governance reform agendas should, firstly, seek to restore both Schumpeterian finance and Schumpeterian entrepreneurship. Secondly, "creative-destruction management policies" should become a key tool to accomplish those goals. Finally, the draft agendas proposed above (Section 5 and 6) would be a necessary and important step (although not sufficient) for a more effective and democratic frame to manage globalization both in finance and in knowledge.

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