

La lettre de la régulation

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ÉDITORIAL

La monnaie est une institution sociale fondamentale. Chaque période charnière du développement voit naître des nouvelles formes et pratiques monétaires. Robert Guttman analyse la monnaie numérique, le « cybercash », dans la perspective régulationniste de l'émergence d'un nouveau mode de croissance. Comment ces monnaies numériques sont-elles créées, comment l'*ekrach* influence leur développement, comment peuvent se mettre en place les divers mécanismes de la confiance dans ces nouveaux dispositifs monétaires ... un programme de recherche qui éclaire les formes encore incertaines du « *cybercapitalisme* ».

POINT THÉORIQUE

CYBERCASH: The Coming Era of Electronic Money

by Robert Guttman (Hofstra University, New York)

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Ever since its inception nearly thirty years ago Régulation Theory has accorded money a central role in the accumulation dynamic of capitalist economies. Breaking with the mainstream tradition of analyzing money as just another good and pushing beyond Keynes' notion of money as financial asset, Régulationists have analyzed money as *social institution*. This alternative vision has been pursued from a variety of angles, most originally in the trilogy on the deep roots of money as one of society's greatest inventions by Aglietta & Orléan (1982; 1998; 2002). My own work has focused on the *modus operandi* of money and its institutional insertion in our cash-flow economy where it serves as representative of income, most liquid form of capital, and measure of value at the same time (Guttman, 1994).

This insertion is complicated by the dual nature of money. On the one hand, money is a *public good* to the extent that its proper functioning - in terms of its effective creation, smooth circulation, and stable valuation - yields large social benefits which every actor in the economy should be able to enjoy. At the center of our payments system, money greatly facilitates the organization of economic activity. On the other hand, money is also a *private commodity* inasmuch as it is created by private agents for profit. When banks create money in acts of credit extension, they earn more income by transforming low-yield cash reserves into higher-earning assets such as loans and securities. This private-commodity aspect turns money into a vehicle of inequality (unequal access), instability (procyclical supply), and innovation (proliferation of money forms), all conditions which may very well undermine its public-good qualities. Such a profound contradiction necessitates administrative management of money, nowadays by a combination of monetary policy tools, financial regulations, lender-of-last-resort mechanisms, and international monetary arrangements. The precise

constellation of these "weapons" in the arsenal of central banks constitutes a *monetary regime* which forms an integral part of the underlying accumulation regime and its mode of regulation. Ever since the stagflation crisis of the 1970s and early 1980s disintegrated the postwar regime of state-administered credit-money, we have witnessed the progressive deregulation of money, securitization of credit, and computerization of finance as powerful engines driving us toward a new monetary regime (Guttman, 1996; 1997).

In my latest work (Guttman, 2003) I pursue the historically verifiable argument that monetary regimes are decisively shaped by the prevailing money forms which they have to administer. Transitions in monetary regimes are typically periods of accelerating monetary innovation, giving rise to new money forms which exist beyond the regulatory reach of central banks. We can see this clearly with the Eurocurrencies market which emerged in the 1960s as a key vector of cross-border capital movements to play a crucial role in the deregulation of exchange rates (1971-73) and interest rates (1979-82). New monetary regimes typically get anchored around new money forms gaining widespread acceptance. Their diffusion to the point of dominance changes the way our economy works. This, I believe, is precisely what is beginning to happen now with the emergence of electronic money, in particular the digital money circulating on the internet which I have termed *cybercash*.

For quite some time now banks have pushed key elements of electronic money as a byproduct of their growing use of advanced information technologies: automated teller machines and "plastic money" (credit or debit cards) in retail banking, electronic fund transfers and automated clearinghouses in wholesale banking, computer-based "home banking." The emergence of the internet in the early 1990s as a global computer

La Lettre de la régulation diffuse toute information concernant les publications, séminaires, colloques ou autres activités de recherche en relation avec l'approche de la théorie de la régulation. Ces informations peuvent être adressées : à Henri Nadel, rédacteur-en-chef de *La Lettre de la régulation* GERME/Univ. Paris 7/Denis-Diderot, département d'économie, 2 place Jussieu, 75005 Paris, nadel@cicrp.jussieu.fr

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and communication network has given electronic money a whole new dimension for its propagation. From the very outset, the two leading credit-card companies (Visa, MasterCard) extended their duopoly by jointly introducing the "Secure Electronic Transaction" (SET) protocol which moved their computerized payments system onto the internet. While their plastic cards represent only activation of credit lines and thus do not constitute a full-bodied money form, they do resemble money inasmuch as they can be used for payments and involve inter-bank transfers of funds. Pressured by this early version of cybercash, many banks began to establish a presence on the World Wide Web after 1995. But here the banks found themselves handicapped by the absence of their own online money which clients could access or transfer while logged on the internet. This technological barrier to entry prompted a search for acceptable forms of online money capable of challenging the dominance of credit cards, notably experimentation by banks with electronic cheques and smart cards. The great promise of the internet as electronic marketplace created additional incentives for the development of online money forms in support of an expected explosion in the volume of *e-commerce*. And so a second wave of internet-based monetary innovation was launched in 1998 by dot-com start-ups offering online fund transfers via email (e.g. PayPal), coupon money for use in specific online merchant networks (e.g. Flooz, Beenz), or digital coins (e.g. DigiCash).

This birth phase of cybercash proved difficult, with many experiments (e.g. Flooz, Beenz, eCash) falling victim to the collapse of the internet bubble in 2000-01. After facing major start-up costs to launch their online-money platforms, many of the dot-coms simply could not achieve minimum efficiency scales for their cybercash supplies before impatient (and increasingly panicky) venture capitalists pulled the plug on financial support. It takes time and effort to habituate the public to a new type of money and gain its trust. Matters were not helped by the early dominance of credit cards in the business-to-consumer (B2C) segment of *e-commerce*. The internet also proved to be a much harder place for *e-commerce* firms to make a profit than originally envisaged during the early days of the internet boom. The absence of traditional monopolistic advantages anchored in the physical world (e.g. geographic location, seller's information advantage), intense competition, barriers to full-cost pricing of services, and a lack of ingenuity in adjusting business models to the online world all hampered the progress of the primary target group for cybercash - the dot-com start-ups venturing into *e-commerce*. We should also keep in mind that this new form of high-tech money must earn the public's trust quite differently than traditional money forms. Metal money was trusted because of its intrinsic value. Paper money was trusted because of the backing by its issuer, whether government or commercial banks. Electronic money, by contrast, gains acceptance only when there is confidence in its technological infrastructure. The internet has so far failed to calm widespread public fears about online privacy and security, thus making it more difficult for cybercash to become widely accepted.

The *e-krach*, with internet stocks down over 90% from their peak in early 2000 and scores of dot-coms bankrupt, may prompt us to write off *e-commerce* and online money as passing phenomena growing out of a bubble now burst. Such a conclusion would be prema-

ture. A boom-bust pattern is typical for the birth phase of technological revolutions. The promising prospects of such a revolution trigger speculative euphoria while its actual penetration renders a lot of capital prematurely obsolete before paving the way for new sources of income generation on a large scale. We have seen such a technology-driven boom-bust pattern with the railroads in the 1870s and Fordist mass production technologies in the 1920s. In neither instance did the crash abort the revolution. Nor will it do so with the internet. On the contrary, its crisis may actually strengthen the foundations of the technological revolution by sorting out what works and what does not, by cheapening assets linked to the new technology as incentive for broader diffusion, and by forcing suppliers to restructure their operations. Survivors of the crisis end up with better cost controls and larger market shares, a pattern already evident in the recent revival of Amazon.com, Yahoo!, Overture, and many other internet-based companies. Throughout the crisis both internet usage and *e-commerce* volume have continued to grow rapidly. We see more and more sectors of the economy heavily impacted by successful online firms (e.g. expedia in the travel industry, E*Trade in financial services, WebMD in health care), forcing traditional "brick and mortar" firms to expand their online presence. Luckily such expansion has become easier due to the crisis-induced surpluses of internet resources available at rock-bottom prices.

Post-crisis recovery of the internet will be facilitated over the next few years by dramatic improvements in the quality of sites, speed and constancy of access, interactive communication, and transaction capacity. Every layer of this medium's architecture is currently being subjected to technological re-make - from fiber optics, satellites, and broadband in its communication structure to more powerful access devices in the distribution sphere and spectacular software innovation in the brain center. For example, the imminent replacement of the antiquated Data Encryption Standard (DES) with the exponentially more effective Advanced Encryption Standard (AES) will greatly improve privacy and safety protections for internet users while at the same time enhancing the operational efficiency of online traffic. It is quite conceivable that the AES will lead to a new high-security layer which can only be accessed by those willing and able to pay, a development brought closer to realization every day by experimentation of major internet service providers (e.g. Yahoo!, Microsoft, AOL, Wanadoo, Web.de) with online shopping protocols and multi-task access platforms. Provided they can offer unique products which their clients are willing to pay for, these ISPs and affiliated online partners will be in a position to generate a lot more revenues streams. We can therefore expect a quantum leap in the *commodification* of information, the online production and distribution of information-based services restricted to those willing to pay.

Cybercash can very much help with the commodification of information. This, after all, is money as software, thus endowed with high-tech capabilities which no previous money form possessed. The high-tech nature of cybercash will surely pose unique management problems, such as new (especially reputational and legal) risks, sharp volume fluctuations, complexities in the asset backing of cybercash supplies, convertibility with other money forms, and disruption of online payments systems. But that same quality will also allow digital money to become embedded in our online economy in entirely new ways. Money flows will surely

carry with them large amounts of information facilitating the conduct of transactions and settlement of contractual obligations. Cybercash can be earmarked for exclusive use in specific networks or products. Payments can be easily structured in installments, with the cybercash unit programmed to trigger automatic deductions out of the borrower's income or asset pool at specified dates. The spread of such installment credit will bring about a dramatic expansion of our "debt" economy, complemented by a much more diverse array of marketable assets which borrowers may use to secure their debts. B2B-oriented cybercash variants could offer netting facilities which cancel the mutual payment obligations within multi-firm alliances and thus allow these groupings to operate with a lot less cash on hand. When offered as a coupon, cybercash can be used as incentive to induce certain actions as was the case with been given to consumers as reward for "e-work" they did on behalf of the issuer (e.g. site registration, survey participation, repeated purchases).

The high-tech capabilities of cybercash will seek to leverage the internet's unique facilitation of efficiency gains. That medium is especially conducive to synergies in product development, known as *scope economies*. Imagine, for instance, what cybercash could do for universal banks offering their clients an integrated package of financial services online. Equally important are the internet's *network economies* where a network becomes more valuable for its individual members with growing size (e.g. more buyers encouraging more sellers and vice versa). See what happened to the popularity of its online auctions when eBay teamed up with PayPal to offer its now nearly 40 million auction participants a convenient payment method via email which was perfectly suited for this spontaneous P2P network.

A third generation of cybercash experiments, starting in 2001 and increasingly involving large ISPs (e.g. Microsoft) or leading banks (e.g. Citibank), is making sure that this new money form will mature beyond its difficult birth phase to become a pillar of internet-based economic activity. Much progress has been made in the last couple of years in the standardization of *e-checks* and their linkage to electronic bill presentment and payment (EBPP) technology. Several developments, including antitrust suits against Visa and MasterCard, the success of France's "carte bancaire" consortium or AmEx's Blue card, and technological breakthroughs by Gemplus and Mondex, have moved us closer to the take-off of smart cards which soon will become very smart indeed and so turn into a person's principal means of identification, authentication, access, and fund transfer without requiring any special hardware to activate. The success of *email money* illustrates that cybercash can move beyond mere automation of existing fund transfer mechanisms and evolve into an autonomous money form circulating outside of the banking system. When PayPal allowed its customers to spend accumulated balances in their email accounts without prior reconversion into bank balances, it broke a barrier. It became in effect, like a bank, capable of money creation. The development of *digital tokens*, a form of cybercash offering great flexibility in design and payment modalities, has matured with eCash's Monneta platform or Oakington's Amadigi platform. The biannual "Survey of electronic money developments" by the Bank for International Settlements (bis.org) provides a good overview of the proliferation of different cybercash variants across the globe.

Banks as well as other internet participants, such as ISPs, software developers, and telecoms, have an active interest in developing cybercash variants, since they could reap large benefits if their experiments succeed. Such *digital seigniorage* may include user fees, positive interest spreads between liabilities and assets, licensing fees, subscription income, reconversion profits, reputational gains from enhanced brand recognition, and monopoly rents based on unique expertise. Even if the banks end up still controlling the issue of cybercash, they will have to form partnerships with the providers of the internet's infrastructure for technical know-how and so share seigniorage gains with their partners. Cybercash systems will be designed for specific niche segments of e-commerce (e.g. email money for P2P networks, B2B fund-transfer and netting arrangements) or as general-circulation variants automating the existing payments system (i.e. e-checks, smart cards). Each system will create its own unique bundle of seigniorage benefits and rules of sharing.

As we project the next phase in the life cycle of cybercash, we are led to wonder about the internet's role in our ongoing transition toward a new accumulation regime. The internet will spread far beyond the World Wide Web and self-enclosed intranets for in-house communication within corporations, comprising eventually also extranets linking the units of multi-firm alliances, peer-to-peer (P2P) networks as pioneered by eBay or Napster, even machine-to-machine (M2M) communication when the internet becomes a tool for further automation. Such proliferation of alternative networks reinforces the internet's potential for dramatic reduction of search, communication, and other transactions costs whose presence has until now justified the vertical-integration model of large corporations (Coase, 1937). The end of the Coasian paradigm of the Fordist firm will see many more production activities outsourced, organized in sequences of market transactions within loosely organized online alliances of service providers. The internet is a powerful tool with which to restructure corporations and reorganize markets in the direction of such *b-webs*.

The transformation of vertically integrated industrial corporations into multi-firm b-web alliances is just one indication of how big a role this medium might play. Imagine what the internet could do to the deployment of financial capital and securitization of credit once most securities or currencies are traded, even issued online. We can already witness the power of new business models specifically adapted to the internet - the examples of Dell Computers, expedia, eBay, Amazon.com, and E*Trade come to mind here - to transform entire sectors of our economy. As it evolves over the next decade, the internet will make sure that any new accumulation regime becomes anchored in the commodification of information as both strategic resource input and profitable service output. In the process producers will come to rely much more heavily on *intangible capital*, notably intellectual property rights, collective knowledge pool of employees for service-enhancing innovation, the ability to generate scope economies in product development, a corporate culture encouraging both individual initiative and teamwork, the quality of b-web coordination, and brand recognition built on a reputation of quality. At the same time the internet will promote the financing and valuation of intangible capital by new channels of *fictitious capital* in the form of derivatives, partnership shares, and risk-socialization schemes. A broader range of securities will make it possible for individual actors to turn a

greater variety of skills and future income prospects into marketable assets or collateral for debt. The integration of cybercash, intangible capital, and fictitious capital will give us a sort of *virtual capitalism* penetrating every niche of our economy.

The modes of regulation of such a new accumulation regime must center on management of cybercash, a tendentially privatized and deregulated money form. The spread of cybercash is bound to reduce the traditional monetary base by economizing the need for bank reserves. This erodes seigniorage gains and monetary policy control of central bankers who will also face more volatile velocity of money and global circulation transcending time and space. At the same time the central banks will have to participate in the emerging global payments system so that they can keep track of cross-border flows, manage the convertibility of money forms, and maintain smooth operation of this system during times of instability. If the creation of cybercash moves beyond the banking system, then the Fed, the ECB, and other central banks will have to settle their conflicting views about how to regulate such issuers (see European Central Bank, 1998 and Federal Reserve Bank of Kansas City, 2001 for more on this difference in regulatory approach). These institutions will in any case have to cooperate more intensely to harmonize financial regulations for universal banks and cope with the increasing synchronization of business cycles across the globe. Cybercash will also pose problems for fiscal policy, notably the collection of sales taxes in cyberspace and increased tax evasion. New sources of poverty rooted in inadequate access to the internet, increased pressures to upgrade a country's infrastructure, and competition between nations on the basis of their human capital will shape the spending priorities of governments. Cybercrime, including money laundering and attacks by hackers or terrorists, will add considerable expense. Ultimately it will be the quantum leap in globalization brought about by the combination of cybercash, e-commerce, and b-webs which will force upon us internationally coordinated policy regimes - a trend difficult to imagine amidst today's political fragmentation into adversarial blocs.

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PUBLICATIONS

La Lettre de la Régulation informe ici sur les publications (working papers, articles, ouvrages) qui lui sont signalées et concernent le programme de recherche de la régulation.

Barbier J.C., « Une Europe sociale normative et procédurale : le cas de la stratégie coordonnée pour l'emploi » *Sociétés contemporaines*, n° 4, 2002.

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ANNONCES DE SEMINAIRES

« INSTITUTIONS ET DEVELOPPEMENT »
le vendredi de 14 à 16 heures
à la MSE 106-112 bd de l'hôpital - 75013
(6^{ème} étage/salle des conférences)
<http://matisse.univ-paris1.fr>

- 23 MAI

Insertion des jeunes dans les DOM

Marie-Ingrid BREZE (MATISSE), Karine RADOJCIC (MATISSE),
Françoise RIVIERE, Raoul LUCAS (Univ. la Réunion)

- 6 JUIN

La portée des travaux de Polanyi pour penser le développement

Jérôme MAUCOURANT (Centre Walras, Lyon)

ATELIER « ARGENTINE »

Journée d'étude

SAMEDI 17 MAI 2003

9h - 18h

(grande salle)

à l'ENS 48 bd Jourdan 75014

L'atelier « argentine » organise une journée d'étude
le samedi 17 mai 2003 sur la crise Argentine autour
de 3 thèmes :

- Changements monétaires et rapports internationaux

avec les interventions de S. Golliac, L. Baldi, N.
Mulder, D. Panigo et D. Mocero, J. Sgard.

- Mouvements sociaux et recomposition du politique

avec les interventions de D. Merklen, G. Kessler et S.
Penalva.

- Evolution des structures productives

avec les interventions F. Albornoz, P. Espanol, Y.
Kalantzis, T. Jacopin, M. Zanabria, P. Lavarello, V.
Robert.

- Table ronde de conclusion : Argentine : que faire ?

avec la participation de R. Boyer, L. Miotti, C. Quenan,
C. Winograd.

Voir le détail du programme sur le site :

http://www.upmf-grenoble.fr/irepd/regulation/Argentine_2002

MARDI 3 JUIN

9h30-17h30

à l'université Paris VII

(bât. Montréal - 103 rue de Tolbiac 75013)

Amphi 46

« DE LA TRANSFORMATION POST-SOCIALISTE A L'INTEGRATION EUROPEENNE »

organisé par le
GERME/Paris 7, CEPN (Paris 13)

J. Rupnik (CERI)

« L'élargissement : attentes et appréhensions »

B. Chavance, É. Magnin (Univ. Paris 7)

« Transformation systémique et intégration européenne dans les
différents PECO, 1989-2004 : une approche comparative »

J-P. Faugère (Univ. Paris 11)

« L'impact de l'élargissement sur les politiques de redistribution »

S. Dupuch, H. Jennequin, E.M. Mouhoud (Univ. Paris
13)

« Intégration européenne, élargissement aux pays d'Europe
centrale et orientale et économie géographique »

F. Boudier-Bensebaa (Univ. Paris 12)

« Intégration *de facto* et intégration formelle des PECO à l'UE : le
rôle des investissements directs étrangers »

M.C. Maurel (EHESS)

« La dualité structurelle de l'agriculture polonaise : le coût social de
l'intégration »

C. Grasland (Univ. Paris 7)

« Les inégalités régionales de l'Europe élargie : une analyse
spatiale »

G. Mink (CEFRES, Prague)

« L'élargissement européen : un troisième choc social ? »
Daniel Vaughan-Whitehead (Commission européenne), «
Elargissement : quel impact sur le modèle social européen ? »

Discutants : G. Graziani (Univ. de Parme), J. Mazier –
Univ. Paris 13), G. Wild (CEPII)

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LUNDI 16 JUIN

9h – 18h

**à la Maison des Sciences Economiques
106-112 Bd de l'hôpital - 75013 PARIS
(métro campo-formio)**

« LES MODELISATIONS DE L'AUTO-ORGANISATION EN ECONOMIE »

organisé par :

- C. DUPUY (LEREPS-GRES/Univ. Toulouse 1)
- B. PAULRE (MATISSE-YSYS/Univ. Paris 1)

9h-13h

A. Berro et I. Leroux

Négociation et enjeux de pouvoir. Une simulation du "pouvoir du faible" en vie artificielle

O. Bouba-Olga

Innovation, proximités et développement régional

N. Jacoby

Les effets de la sélection interne sur l'évolution des firmes

S. Lavigne

Les institutions cognitives comme facteur de coordination des décisions d'investissement. Modèle d'apprentissage sur un marché financier artificiel

M. Saint Jean

Analysis of the coevolution of suppliers and users through an evolutionary modelling - The case of environmental innovations.

R. Suire

J. Vicente

Les nouvelles formes de modélisation des interactions économiques

14h30 – 18h

J. Lesourne (CNAM, Paris)

P. Allen (Cranfield University)

G. Dosi (Scuola Superiore Sant'Anna, Pise)

C. Dupuy (LEREPS-Gres, Univ. de Toulouse)

B. Paulré (Matisse-I.S.Y.S., Univ. de Paris 1)

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Forum de la Régulation 2003

9 - 10 OCTOBRE 2003

à l'ENS 48 bd Jourdan – 75014 Paris

9 oct. matin - une séance plénière
sur le thème de *l'économie politique des inégalités*

9 oct. après midi et 10 oct. matin
21 ateliers en sessions

10 oct. après midi
une séance plénière de conclusion :
« *les économistes régulationnistes en politique* »

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Pour l'année 2003, le montant de la cotisation a été fixée à 40 € et à 16 € pour les étudiants. Cette adhésion donne droit au vol. 7 de **L'Année de la régulation**.

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