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Issue no. 71 28 May 2015

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A program proposal for creating a complementary currency in Greece

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Abstract
This paper describes the concept of a national "complementary" or "parallel" currency, and the advantages of implementing it in the form of purely electronic money – no bills and coins. It suggests a fairly detailed program for how a parallel or complementary currency to the euro could be introduced in a crisis-hit eurozone country, focusing on Greece. Finally, some questions and counterarguments are addressed.

JEL codes: B50, E5, E42, G20, G28, H12, H62

I. Introduction

The premise for the proposal to be presented in the following is that the Syriza has, at best, a breathing space of – say – three months to half a year before it must introduce a complementary (or "parallel") electronic currency in order to achieve macroeconomic stabilization of the Greek economy. This paper is written in the recognition that even in hard-hit Greece, a majority of citizens still favour staying within the eurozone.

While writing this (20 May 2015), the Greece drama is worsening day by day, and big changes may therefore occur soon. Consequently, some of the content of this paper may be out-dated by the time it is read – Greece may have decided to pursue different policy strategies than is recommended below.

2. How does a complementary electronic currency (to the euro) work?

Policy proposals for Greece similar to what follows have been put forth earlier by this author, for instance in (Andresen, 2010 and 2012). The additional complementary (also called "parallel") circulating medium of exchange and means of settlement to be proposed will be designated a *Tax Anticipation Note* (TAN), a term introduced in (Parenteau, 2015). The TANs are used by the government to partly pay wages, pensions and for domestic purchases. The TAN enjoys confidence since anyone can use it to pay taxes – more on this below. Transactions are done via encrypted entries through the instrument of mobile phone/SMS. These transactions are automatically received, accounted for and settled on a server with ample capacity at the country's Central Bank. Or perhaps preferably – *for political or legal reasons* – at a bank-like facility established for this purpose outside the government, from now on just called *the TD*: "TAN Depository".

Such a mobile-based transaction system may be implemented through one of the technically proven schemes already in successful operation in some developing countries, also recently put in operation in Ecuador. The system may be implemented to work also with older models of mobile phones, since it may be SMS-based (though the main implementation will be in the form of apps for smartphones).

There are no physical/paper TANs in circulation. The government has a “TAN account” at the TD with no limit. Like bank loans, TANs are created out of thin air as a credit to citizens, and like bank loans they are later destroyed when paid back (in settlement of citizen tax liabilities). The government account is debited whenever it pays wages or pensions, or buys goods or services. All citizens and domestic firms are automatically assigned cost-free TAN accounts at the TD. Interested foreign entities who may also face liabilities to be paid to the Greek state such as custom duties, tariffs, etc. may also be offered accounts (though we will expect TANs to be used mostly by domestic agents). TANs are perpetual, zero coupon, bearer bond, so there is no interest paid to holders of TANs, and in that sense, physical cash has properties similar to a TAN. Private lending denominated in TANs is not designed as an option in the pioneer period of this system, though spontaneous peer-to-peer TAN lending will probably emerge and grow.)

The government pays employees, pensioners and suppliers in a mix of TANs and euros – say 20% TANs at the outset – but this share should (and will) probably increase. One TAN is nominally equivalent to one euro and accepted at the Treasury in settlement of tax liabilities at 1 TAN = 1 euro. It is conceivable private market exchange will deviate from parity from time to time, but we believe there are built in stabilization mechanism inherent in TANs. For example, should TANs trade at a discount to euros in private markets, Greek citizens with tax obligations (and remember, many citizens and firms have large tax arrears at the moment) can give themselves a tax cut by purchasing TANs with euros at a discount, and paying their taxes with TANs, thereby creating a demand for TANs that will reduce if not eliminate the discount through an inherent arbitrage mechanism. The mix of TAN and euro denominated government spending may be adjusted based on how the process develops. Since the TAN may be used by the public to settle tax obligations, it will likely be voluntarily accepted to a reasonable degree as a means of final settlement by many agents; both individuals and firms. TANs do not have to be officially declared “legal tender” to be accepted.

Employees and firms offering goods and services will increasingly – as the scheme gets more popular – decide to accept a certain share of TANs as payment, while the rest must still be in euros. While the government pays wages and taxes in the government-determined mix of TANs and euros, the mix in private sector transactions will be decided freely by the involved parties, and will differ between trades. Businesses that accept a fairly large share of TANs are likely to find that they get an in increasing market share and grow more quickly than their competitors. Notice how this sets up a first mover advantage, which should speed up the adoption of TANs as a means of final settlement in the private sector. Employers and employees may negotiate the share of wages being paid in TANs, based on private portfolio preferences and speed of adoption of TANs. Workers that accept a larger share of TANs in their wages are likely to find it easier to get a job.

With regard to external trade activity, TANs should enable activation of idle labour and production capacity, thereby raising the odds that exports can increase. Thus, even if this extra activity is mediated (partly) with TANs, the introduction of TANs may enhance foreign currency inflow and the ability of the country to service euro debt. In addition, government spending on trade related infrastructure, as well as subsidies or direct fiscal spending on

R&D and marketing of domestically produced tradable goods, should help improve Greece's current account balance as Greece pursues active fiscal policy to escape the ravages of Troika imposed austerity measures.

Another positive effect may be that private sector pessimism is reduced. Increased household and business confidence will decrease the liquidity preference of individuals and firms that currently possess euros, but have been holding back in their spending of euros due to uncertainty or fears related to future cash flow streams related to real productive activity, as well as financial investment activity. For a given amount of euro stock held by agents, the aggregate euro flow will likely increase as confidence returns and liquidity preference shrinks amongst wealth holders, i.e. we should observe an increase in euro money velocity with the introduction of TANs, and undoubtedly, alongside that domestic portfolio preference shift, a share of euros held overseas today will probably be repatriated.

3. Important advantages of electronic TANs versus bills and coins

a) The system can be implemented fast, and adjustments that turn out to be needed can be implemented in software, therefore very easily.
b) The system is very cheap to run, compared to a system with notes and coins. and forgery is impossible.
c) There is no confusion with bills and coins (i.e. euros) that are already being used.
d) No deposit insurance is needed. Money TANs cannot be lost, and this is clear to the public – thus there are no bank runs.
e) A black economy in TANs is nearly impossible. The same is true with respect to tax evasion. Intelligent software can monitor transactions 24/7, and such software can flag human monitors when suspicious patterns emerge. Knowledge of this implies a credible threat, so that agents to a large degree will abstain from even attempting illicit behaviors or gaming of the system.
f) TANs cannot be used for capital flight, since they only reside at the TD, and are primarily useful in settling Greek tax liabilities.
g) Also, some more monetary policy advantages merit mention: negative interest on money held (demurrage) may be easily implemented (as the ECB already has to some degree with its negative deposit facility rate, to speed up circulation if that is needed.
h) There is another possible control tool with the opposite effect is also made possible by TANs only existing as accounts at the TD: a tiny but adjustable *transfer tax* between any accounts could be implemented as a form of restrictive policy. This would be incredibly more effective in dampening an overheated economy than an interest rate hike. As far as the authors know, this is a feasible tool that has not been considered in the large economics literature on inflation control. For more on this, see (Andresen, 2013).

4. A possible program for getting a TAN complementary circulation system working

The government needs to implement some measures, and the parliament may need to pass some laws:

- The first is the creation of a new unit that enters into a TAN contract with the government, the TD. The TD handles all TAN transactions. It creates TANs for the government to spend, and retires TANs when they are used to pay taxes.
- The second is that payment to public employees and pensioners may be done partly in TANs, possibly with some legally binding upper bound on the TAN share.
- A third is that all agents can pay Greek government imposed taxes and fees with either TANs or euros. For tax accounting purposes, one TAN then counts as one euro. But there should be an upper bound on the share of TANs.
- A fourth is that all mobile phone operators shall be obliged to install and run the hardware and software needed for the TAN system, and that the fees they are allowed to collect for transactions are capped, at very low levels. These costs should be covered by the fiscal budget, not paid directly by the user.
- A fifth is about exchange between TANs and euros. There will be exchanges, and the exchange rate should be allowed to float freely. But there should possibly be some measures against types of speculative activity. The TD should be given authority to implement such if that is deemed necessary. A possible problem would be large and fast speculative movements in and out of TANs. These can easily be damped by automatic levying of Tobin taxes based on volume and size of transactions, with one advantage of the TAN system being wholly computerized and residing at one agency only.

Technical and organisational preparations

The government must tighten up its tax collection procedures, as well as insure a more equitable and legitimate distribution of tax liabilities across the Greek citizenry as a condition for the introduction of TANs. The government must ensure that the mobile infrastructure is up and running smoothly before the launch date, with testing and fixing of all problems that have emerged so that everything is ready in time. We recommend copying from existing systems that are up and running. One should also prepare a network of physical outlets that can help the public in using the system. Greece has an extensive network of post offices that might be assigned such a task.

Public information and debate

An information campaign must be run so citizens understand the intent and operation of the TAN alternative government financing system. The government encourage the media to disseminate accurate information and allow forums for public discussion. A crucial part of this initiative is to convey some understanding of monetary systems and modern money theory to the public.

Negotiations with unions and domestic organisations

They must be convinced to accept a share of TANs in wages, especially for public employees and pensioners.

Advice and help to businesses

Firms will have to adjust to two types of payment from customers, complicating matters. To some degree the TAN side of accounting can be automated, since a given business can have more than one TAN account at the TD. Tax payments can also be automated on the TAN side. The TD should help with apps, software and device solutions for fast and convenient TAN payment in shops and on public transport.

A central* organiser *of the system

Probably it is most convenient to assign all tasks related to the introduction and running of the TAN system to the TD, which must be amply and competently staffed. The TD must be supervised by, and cooperate extensively with, the Treasury.

Political process versus the EU

Ongoing negotiations should openly acknowledge the intention of the government to launch an alternative government financing mechanism that introduces a complementary currency system without leaving the euro. The EU side ought to be convinced that the stimulus of TANs to the Greek economy will improve Greece's ability to grow the economy and service euro debt. An agreement on the euro debt service issue should then be more feasible than today. On the other hand, if disagreement persists, Greece will have a stronger position in negotiations because of the TAN alternative that they can still go forward with, as opposed to today where they are completely dependent on further euro injections to avoid the economy grinding to a halt.

5. Discussion

The following discussion will addressing many of the counterarguments against, or expected questions about, the TAN proposal.

The issue of "confidence"

From the outset, TANs will enjoy a certain minimum of confidence because they may be used to pay taxes, as already mentioned. Despite this, initial confidence in TANs may be low, not the least because of widespread distrust in authorities. To discuss the prospects of a TAN, it might be useful to define two entities, "*trust*" and "*need*". Even if trust is low at the outset, need is very high: some initial use of the TAN should be expected because of the alternative of no work or no sale is considered even worse than the risks of using TANs in settling private transactions. *Need will ensure some TAN circulation, even if trust is low*. One may envisage a turbulent start-up period where the euro/TAN exchange rate dives because of scepticism and scaremongering, but that the government stays calm and spends TANs in the promised mix, gradually removing panic and leading to more optimism. With time, a positive feedback process is likely to be set into motion: agents will observe that transactions with TANs are happening all around them, and this will increase trust, leading to more acceptance of TANs, and so on.

Inflation in TANs?

Assume that the government recommends that firms are asked not to set prices in TANs high, but instead safeguard themselves in the start-up period by setting the initial TAN *share* of an item's price low. What the government recommends will of course not necessarily be followed by vendors, but many may try this as a starting point. We should expect that firms (and individuals) that offer products or services where the dominant input factors are domestic, will be most willing to try offering a significant share of TANs in what they accept as payment. In addition, we indicated innovative policy measures, like transaction taxes, as well as reduced fiscal expenditures and TAN issuance, which can be used to manage inflation. As long as the economy is far away from full employment and firms have significant idle capacity, TAN inflation pressures will not be strong. When the economy approaches full employment through TAN financed fiscal stimulus, emerging bottlenecks can be flagged early and dealt with by both targeted public/private investment initiatives, as well as active labor market training programs. This becomes a pro-growth way of addressing possible inflation threats, rather than the typical austerity policies advocated and enforced by the IMF.

TANs and external accounts

At the other end we have products that are imported, and the domestic input factors are subordinate: cars and petrol are examples. Here one can expect that only with time will such sellers start accepting TANs, and the share will never become high. But there will also be a mechanism at work that is pushing in the right direction: when TAN use has reached a significant level for other consumer items, for instance food (where domestic input factors are significant), import-based firms can negotiate a larger wage share being paid in TANs and the rest in euros, hence allowing also such firms to accept a share of TANs in the items they sell. An important aside to this is that the circulating TANs will enhance domestic output. To some degree this will lead to import substitution, thereby, ceteris paribus, increasing net exports, which is a good thing regarding the ability of Greece to accumulate euro reserves in external transactions, and thereby service euro denominated external debt.

But regardless of possible government declarations about how the complementary currency ought to be valued, one should expect the TAN to converge to a value somewhat below parity with the euro. And not floating the TAN versus the euro will lead to growth of a black market.

People not having access to, or wishing to use, mobile phones

Some (among these, especially elderly) people do not have a mobile phone, or are not used to using a mobile phone. In addition, there are districts in Greece with weak mobile coverage. One may let the post offices – suggested earlier as a possible network of outlets for the system – offer people the alternative of using a (paper-based) cheque or giro system to pay expenses in TANs, if the mobile phone for some reason is not an alternative. But such traffic will necessarily be negligible because the mobile phone alternative is so much more convenient. In addition, this would be an opportunity for the Greek government to pursue public investment, or encourage private investment, in telecommunications infrastructure, with the use of TAN financing to accomplish this development goal.

Why not pay all taxes in TANs?

Some proposals suggest that *all* taxes might be paid in the complementary currency, not euros. We believe that would result in TANs not being used for transactions but immediately recycled back in taxes, and the government will not get euros. Yanis

Varoufakis has suggested a solution (Varoufakis , 2014) to force complementary currency into private sector circulation and avoid use of these for immediate repayment of taxes. As we understand him, his proposal entices holders of surplus euros to buy what he calls *FT-coins* from the government, thereby giving the government more euros to spend. FT-coins can be used for tax payment, but not before – he suggests – two years. Every FT-coin has a time stamp and is thus unique. For Greek society as a whole, this corresponds to an increase in euro money velocity without increasing the stock of euros outstanding in the Greek economy. It resembles the government selling a type of bond to the public, since the FT-coins are "bought back" with accrued interest later on, when they are used by the holder to pay taxes. It is essentially a method to get people to buy government debt, so that the government gets more euros to spend. One then depends on the mood and the willingness of "surplus" euro owners, and hence leaves the Greek government financing at the whims of the portfolio preferences of private investors, much as is the case currently. This is in stark contrast to a more convenient directly circulating complementary currency like the TAN alternative government financing instrument, which is homogenous and divisible down to a "TAN cent", and an unlimited tool controlled solely by the government. TANs do not depend on any willingness of bond buyers. TANs also can play a key transition role, unlike FT-coins, in facilitating a gradual euro exit, as well as a complete reinstatement of a sovereign currency, if that turns out to be the direction chosen by the population after exhausting reasonable paths of compromise with the Troika.

Greece needs investment, i.e. lending in TANs

At the outset, the immediate problem is to increase employment and activity, in order to close the enormous output gap, and thereby address the externally imposed humanitarian crisis that is shredding the social fabric of Greece and depleting its social capital while constraining and further eroding its economic potential. This problem may be addressed initially by simply spending more money (both euros and TANs) into the economy. The TAN tool allows the government to instigate emergency employment schemes by spreading its available euro spending flow also to the unemployed. Investment and lending can initially be in euros like today. But saving and lending in TANs may eventually emerge in a spontaneous fashion. If that is not considered sufficient, one may involve the commercial banking system in establishing TAN lending in parallel with euros, particularly if Syriza follows through on the necessary nationalization and recapitalization of its banking system, which after all, was one of the planks in its electoral platform.. An investment loan by a bank with a TAN component can suffice for a business as long as a) the business has Greek tax liabilities, b) other businesses and citizens it transacts with have Greek tax liabilities, and consequently c) its employees and suppliers accept TANs in payment for at least some portion of their settlement of transaction.

Euro debt and euro capital flight

One may at this stage correctly protest that introducing a TAN does not solve the euro debt problem. It also does not solve the problems of richer citizens moving their euros out of the country to avoid taxes or in fear of losses due to collapse of domestic banks, or due to large scale tax avoidance and the large tax arrears in euros. Regardless, one may reply that without an alternative government financing instrument, and a complementary medium of exchange, an economy is wholly dependent on euros to uphold domestic activity. This puts the country in a very weak position when negotiating debt writedowns and/or lower interest rates and longer repayment times on existing debt. It leaves Greece caught in an external Ponzi financing position, Furthermore, by enabling the economy to run much closer to full capacity and employing a much larger share of the population, the ability to net export increases, and by this the ability to service euro debt. The automatic stabilisers will also be at work, giving the government more tax income, and reducing its expenses for unemployed benefits and other social costs due to the crisis. In addition, by introducing TANs, euros are freed up for external debt service. The euro problems are not directly solved by introducing TANs, even if increased domestic economic confidence may after a while induce many agents to repatriate their euros. The issues of capital flight and tax avoidance/arrears are there regardless of whether the TAN proposal is implemented or not, and must be addressed somehow. They have more serious economic effects without a complementary TAN system in operation. In addition, issuance of TANs as a government financing vehicle does not preclude the continued issuance of Greek government debt denominated in euros.

"TANs are illegal"

Greece has a very strong law from 1927 that does not allow the state to issue or re-issue money of any type (Karatsoris, 2015). One might expect a legal battle where opponents of a complementary currency will try to exploit this law to stop the introduction of TANs. Karatsoris argues[1] that one can get around this obstacle if the complementary currency is not declared "legal tender", not denominated in euros (it can be denominated in itself, with a "TAN cent" the smallest unit), and is run by an entity outside the government. We have already mentioned the extensive network of post offices in Greece which already offer transaction services for the public. One could consider establishing the TAN Depository associated with the central administration of the Greek postal system, supervised by the Treasury.

6. Summing up: far better than the bleak alternatives

A complementary electronic emergency currency can – with immediate effects – ameliorate the strongly and persistently lowered living standards for most people in eurocrisis countries, which is the bleak and only future that the EU and crisis country governments (at least before Syriza) have been able to come up with under the bias toward austerity policies that place reduced fiscal deficits as the highest policy priority, and the key (absurdly enough, as the past half decade of a live experiment in this matter have demonstrated) to future economic growth. By the TAN scheme proposed above, it should be possible to activate the immense underused potential that the Greece and other hard-hit eurozone countries have: unemployed or underemployed people will face better prospects for income generation, timely tax payment, and household debt servicing, thus giving allowing a return to social stability. TAN-financed government spending, and private sector TAN circulation will directly and indirectly stimulate domestic production. It will also give an euro-indebted country a much better position in its bargaining for partial debt relief or less heavy euro debt service burdens.

Finally, it enables a gradual and controlled transition (back) to a national currency, if that is what is wanted by citizens after exhausting attempts at finding a reasonable compromise with the Troika. This proposal gives the population and national assembly in a crisis

[1] We are grateful to Nikolaos Karatsoris for input on the legal issues.

country the freedom and time to deliberate and make such important policy decisions regarding the degree of further participation in the eurozone at any chosen time. It returns a degree of decision making freedom to democratically elected governments, and allows the citizenry and its representatives to base their choices on their direct experience with how the alternative financing vehicle/complementary currency works, and how the economy has fared under this parallel system. It directly confronts the four decade old neoliberal TINA assertion that There is No Alternative, and clearly demonstrates AWIP – Another World is Possible. In this regard, TANs may be viewed as a policy strategy that is, in every sense of the phrase, a revolutionary reform.

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SUGGESTED CITATION:
Trond Andresen and Robert W. Parenteau, "A program proposal for creating a complementary currency in Greece", *real-world economics review*, issue no. 71, 28 May 2015, pp. 2-10, http://www.paecon.net/PAEReview/issue71/AndresenParenteau71.pdf

Updated[1] proposal for a complementary currency for Greece (with response to critics)

Alan Harvey [IDEAeconomics]

Introduction

I have been quite heartened by the generally positive response to "A Detailed Proposal for a Complementary Currency for Greece." Up to this point, nobody has, as far as I am aware, identified any substantive errors of fact or logic, so it is reproduced below without edits.

Following I have addressed those criticisms of which I am aware. None of them are convincing, and several simply do not apply. Most have a target that is their author's assumptions, not this proposal. That said, such critiques are apparently receiving wide coverage and attention. Most center on the characterization of the grec as "funny money," basically a sham currency which depends for its value on a gullible population for acceptance and use. I think one would find, if the grec were instituted as described here, more than a few who would be happing to take the grec off your hands, and might even pay a bit with "real" money." The grec is emphatically not "funny money." It has a real, tangible value from day one.

The need

Austerity has delivered obvious suffering to the Greek people and serious burdens to the Greek state, trials that do not need to be enumerated here. The mechanics of austerity drain money and the goods and services it will buy from the economy. Austerity follows from the rule of the primacy of debt, enforced by misguided, coercive and often bizarre policy programs.

The SYRIZA government in Greece is pursuing anti-austerity, pro-recovery policies to the extent it can. There are three primary strictures it faces. The Hellenic Republic cannot (1) use exchange rates to multiply the domestic currency relative to the international currency; (2) employ the fiscal policy demanded by its situation for want of spending power; and (3) use monetary policy, as that is in the hands of the European Central Bank.

Unless the government can unilaterally increase its money supply and its means to increase spending, all roads to macroeconomic recovery are blocked (absent a come-to-Jesus moment by the Troika and a pan-European solution). The fact must be accepted: Monetary expansion is essential, a necessary condition for macro-economic recovery. Without it, fiscal, monetary and exchange rate policies cannot be employed. The question then becomes how to do it within the context of the euro.

A number of strategies is under consideration, including the introduction of a "trade dollar" by a private corporation and the institution of a currency through a new development bank that is "funded" by the NPV of certain tax obligations. A third and very promising option is Robert W. Parenteau and Trond Andresen's TANs (Tax Anticipation Notes), as presented in RWER and elsewhere. Below is a fourth, or perhaps 3(b) to the TAN, referred to here as the GREC (from

[1] 05.20.15

the convenient acronym for Government Reimbursement Exchange Credits). It borrows heavily from the concept of TANs; although was developed separately.

Key considerations:

- What is allowed?
- What can give a currency value?
- What are practical implementation issues?

In the context of Grecs:

- Issuance and use
- Cost to the government
- Size of monetary expansion
- How to encourage exchange
- Scenarios which include a Greek exit from the euro
- Final advantage

What is allowed?

A complementary currency is feasible under the current (or plausibly amended) regulatory regime of the Eurozone insofar as it is "restricted" to certain uses and "voluntary" in acceptance. That is, it cannot be a competitor to or substitute for the euro as unrestricted legal tender, i.e., good for all uses and mandatory in acceptance. The specifics of statutes and treaties are peculiarly set against Greece, often as a result of past debt difficulties, dating back to the 1920s. The specifics of euro circulation within each country are sometimes regulated differently by the particular central bank. In the case of Greece – which, although a member of the association of central banks, is only partly owned by the Greek government – there are some additional hurdles. But TANs are legitimate as bearer bonds. (The grec is differentiated from the TAN – and the euro – also by its being dated, not a perpetual store of value.)

What can give a currency its value?

Here, and some (MMT) would say that in all modern states, a currency gets its value from being accepted for tax payments. (In the case of Grecs, uses would extend to utilities and services.) If an instrument of any kind – note, bond, coin, digital balance – can be submitted for tax payments, since agents and citizens commonly have this obligation, the instrument will come to be exchanged between agents for goods and services. (How fast and how broad this exchange will be a matter of experience.)

Practical matters

- The technical infrastructure present in Greece and the technological sophistication of its citizens will determine the optimal form of the instrument, e.g., digital or physical.
- The scale of issuance must keep in mind the need for trust by the population. There can be no glitches or bugs. It must be immediately useful and reputable and solid.
- An early issuance is obviously much better than a delayed program. The problems exist now. If Greece exits the euro before issuance, the question is moot. But an early issuance could diminish the need to leave.
- The new instrument should be compatible with scenarios that include staying in or leaving the euro.

Government Reimbursement Exchange Credits (grecs)

Issuance and use

In the context of austerity and with the promises of improvement in the lives of citizens implicit in the SYRIZA platform, grecs are conceived as a cousin of TAN, and are used to augment pensions and wages and to replace social welfare subsidies and forbearance. They would be issued in a physical form, i.e., paper. They would be accepted for tax payments for a single year (e.g., 2016), for utility bills and for some government-sponsored services, such as transportation. Initial physical instruments could evolve to forms such as deposits to special accounts at the post office, which are legally allowed by the current regulatory framework and from which cheques could be issues. Then, or even before, grecs could find form in the digital platforms envisioned by the other proposals.

Should the grec expire, i.e., not be used for taxes in the year prescribed, they could be exchanged at a discount at government offices. The discount would depend on the Finance Ministry's targets for the supply. The object is to put exchange value into circulation, and receiving it back in the form of taxes ends the circuit unless they are reissued. The expiration of the grec should encourage turnover, but it ought not to be a drop-dead date. It is likely that old grecs would continue to circulate at a value based on the discount. If new grecs came into circulation, there would be an effective difference in denomination.

Theoretically, as Andresen and Parenteau have pointed out with the TAN, domestic use of the grec should happen at parity with the euro, since the tax payment should by arbitrage bid the values to par. Whether this happens in practice has yet to be seen. To the extent that taxes would not be paid in euros, but might be in grecs, they may trade lower. (That is, "I'm not going to pay taxes unless I can do it at a lower price.") This is not necessarily a bad thing. One can speculate on an advantage, as it would replicate a variable exchange rate.

Advantages of low-tech issuance

- A paper complementary currency can be described on its face in terms that are amenable to regulatory restrictions, as a bond, with the restrictions on use that differentiate it from the euro (voluntary, restricted).
- Paper can be readily understood by its recipients, being similar to other notes, and its official use is clear.
- The physical instrument can carry images that enforce a particular patriotic message.
- The exchange of physical instruments is a matter of hand-to-hand. This would be easier for those technically unsophisticated and would facilitate exchanges that might not otherwise occur.
- The potential for software or technological bugs and glitches is very much reduced.

On the other hand:

- Low tech might be viewed as low impact, desperate, or backward.
- The logistics of physical instruments may be more complicated to the issuer, however familiar to the recipient.

Cost to the government of monetary expansion through grecs

Obviously, the maximum cost would be the euro-denominated tax revenues foregone. That is, the cost in could be no more than the quantity of grecs (or TAN) issued. A number of factors would reduce this "outside cost" exposure:

- If the grec were substituted for other social welfare subsidies and forbearance, those would be cost savings. (Why grecs should be accepted for utilities and government sponsored services is explored below under "encouraging use and exchange.")
- If new taxes or fees payable in grecs were levied on businesses (say the newly privatized), it would encourage their use and be a reduction in net costs.
- To the extent that the government can substitute grecs for euros, the cost would be reduced. It is envisioned the grec issuance would not be in lieu of, but in addition to, current pensions and wages paid in euros. That is, the proposal is not to replace euro payments with grec payments to beneficiaries and employees. If in the course of operations there comes to be a general acceptance of grecs, some government spending could be converted from euros, this would reduce the cost.
- To the extent that economic activity increases, taxes payable will increase, thus reducing the cost.
- The tax liability eligible for payment in grecs, at least initially, might be restricted to a single tax (e.g., property tax) to avoid potential problems for fraud and forgery, as well as to offer a limited sphere for assessment and adjustment.

Size of the monetary expansion

Although the potential cost to the government in forgone euros is precisely limited to the size of issuance, the increase in the effective money supply is not limited. It would be a multiple, depending on the number of times the currency was exchanged prior to payment of taxes. (Thus it is very much predicated on the society's willingness to use them for exchange.) The effective supply can be reduced, however, by taking grecs out of circulation when received as revenue, or increased by recirculating them. The multiplier will be larger the more the issuance is targeted to low- and moderate-income people.

Encouraging use and exchange

The strategy of issuing grecs to low- and moderate-income people has many advantages in terms of stimulating wide use of grecs for exchange. The best case is for them to find it immediately viable in their lives.

- The low- and moderate-income people targeted for issuance are those most motivated to find a use for a new currency.
- Use for public services and utilities would encourage use.
- If usable for utility payments, the grec could replace welfare programs involving subsidy and forbearance. Grecs would give people a means to make payments and reduce bureaucratic costs of determining who is eligible and how the benefit is delivered. But it would also give people without appropriate tax obligations a clear use, and hence a tangible value.
- Likewise, if usable for government-sponsored services, citizens without tax or utility bills can convert grecs into tangible value (e.g., monthly bus or ferry passes or other services). These public services may not be strictly public enterprises, and may be

run by private or local entities, but a mix of new taxes and or other arrangements might be amenable to all.

- A tax liability that is due annually (property tax) would put grecs in people's pockets for an extended period, during which experiment and exchange might take place.
- A concerted program of public information and indoctrination displaying the opportunity for exchange prior to tax time would be useful. To the extent that people use them only for the tax purpose, the monetary expansion is limited.
- Open markets such as are common in Greece might be a venue for experimentation. If vendors and merchants could pay local levies or property taxes in grecs, they would be likely to accept them in trade for produce and other commodities.

Scenarios which include leaving the Eurozone

If Greece should leave the euro, the grec system could remain in place as a means of replacing social welfare payments. The system might serve as a benchmark for the value of a new drachma, or could even be expanded to become the new money by allowing all taxes to be paid in that form.

The final advantage of the grec

The proposal is within the bounds of what is legally plausible and is clearly not a threat to the euro in terms of exchange or trade. No euro-denominated obligations would be converted or reset to grecs. The final advantage is that in this way the government can deliver on at least some of its promised amelioration of cuts in wages, pensions and social services.

Summary of Proposals

- **Tax Anticipation Notes (TAN).** The proposal is well described in the pieces by Trond Andresen and Robert Parenteau. These would be zero coupon, perpetual, bearer bonds, and digital instruments, though physical form is not excluded in theory. The electronic platform has been successfully applied elsewhere. TANs would be clearly and simply useful for taxes. The authors believe that citizens would quickly realize the value was at parity, since one TAN would be worth one euro at tax time, and it would be arbitraged to par. The authors have concentrated on the theoretical legitimacy of the plan, and have not addressed the practical matters to any great degree, other than the mechanics of issuance and acceptance.

This seems to be a completely coherent way of expanding the money supply, although the digital platform which has been successful in Africa and elsewhere, but not in the context of settled practices and habits.

- **The Greek Dollar ($G) (working name).** A private company would issue a digital currency, creating a new basis of exchange. Eurozone restrictions exempt private companies. The initial operations involve a substantial advance from the Greek government. The initial phase would involve the purchase of $G at a particular rate. $G would be issued to all citizens in a kind of helicopter money program.

At present the use for taxes and payment of government employees is discussed in general terms. The company would encourage partial ownership by government and would finance operations via very modest charge on each transaction using $G.

This is problematic in some senses. A private company is excluded from rules on complementary currencies, but there is a clear connection and interrelation with the government in the proposal through (1) the underwriting, (2) the discussion of taxes and payments to government employees, and (3) by way of the proposed partial stake in the company by the government. The proposal seems to be confident in the technology, and confident that it can be issued quickly, with little preparation of the population for its use. It seems to be assumed that the initial exchange of $G for euros will set a rate of exchange that the market will accept, or that promises that some future taxes will be payable in $G will have gravity.

- **A "funded" currency.** In this proposal, in its current form, as I understand it, the net present value of some tax liabilities would seed a complementary currency via a new Greek Development Bank. The currency would be used to finance business investment and thus economic expansion.

The originator is well versed in the institutional frameworks, and this alternative should receive serious consideration.

Response to critics

The grec is a way to pay pensions and wages without using euros.

The grec is not for paying wages and pensions, it is – as clearly described – for paying taxes, utilities and government sponsored services. It is ***distributed*** through the pension and wage system in this design for the reasons and purposes described. As clearly stated, these payments are "in addition to," not "in lieu of" payments in euros.

Taking a moment to think about it, even the euro payments for wages and pensions are not "payments in euros," unless you hoard them for security or eat them for breakfast. They are payments in a medium that can be translated to food, shelter, clothing, etc., and ultimately for paying taxes.

This proposal does include a phrase referencing a contingent down-the-road possibility that grecs could be substituted for euros. It may have been better to have left this hypothetical out if it is the cause of the confusion.

The distribution through wages and pensions is designed (1) to target those most likely to find its exchange value, (2) to ameliorate want, as grecs are substituted for euros and spending power is freed up, and (3) to maximize the impact, as the multiplier is higher, because turnover is greater when lower incomes receive a distribution.

The grec is "funny money" and has no value other than that assigned by a gullible population.

This critique is absurd on its face. One can imagine monopoly money being distributed (and this is basically the trade dollar proposal), but one cannot imagine government accepting it for taxes, the electric company taking it for payment, or buying a bus or ferry pass with it.

The grec will cause inflation.

In a rampant deflation with a high level of idle capacity, inflation is not Greece's problem. At the level of issuance contemplated here, there is no practical prospect for inflation. Any fear of hyperinflation is certainly a fantasy worthy of the Germans. As a dated currency, there will be incentive to use it in the short term, perhaps, increasing "velocity," and this is to be welcomed, since it increases the effective multiplier, increases effective demand, and stimulates business.

The government cannot afford the revenues lost to payments in grecs.

In theory, the government can raise taxes – perhaps on the wealthy – in the amount of grec issuance that are payable in grecs and net zero. A detailed assessment should be undertaken. The credits are due at the end of the tax year, so no contemporaneous loss occurs.

The important thing is the trust of the population.

Trust, or its absence, is certainly the most important obstacle to widespread use in exchange, and trust should be encouraged by all available means. That said, the basis of trust is that the grec works as advertised: you submit it for taxes, utilities, etc., and it is accepted. These narrow uses are guaranteed. On this foundation, it is only a matter of time. But time is crucial.

The grec does nothing to address the urgent need for investment capital.

This is correct to a point. The grec does nothing directly to ameliorate Depression levels of investment. One can imagine other distributions, directly to start-ups and so on, but that is not this proposal. The effect of a successful program on tangible private investment is far greater than zero, however, and comes through the demand side. As the prospect for profit increases, capitalists will find reasons to invest. (The public sector is sadly absent in its responsibilities to invest, by reason of the Neoliberal chokehold on the European transnational institutions.)

The grec is awkward as a currency. How would you make change?

This is very true, and a good reason to evolve to a digital platform at an early date. In its physical form, one can imagine denominations of 100 and 20, but not much further. Change would have to be made in euros if physical grecs were proffered. Cheques drawn on postal accounts are, however, not subject to this problem, and could be quantified precisely to the purchase.

The Syriza government is not competent enough to institute such a program.

The Syriza government is competent enough to identify the austerity train wreck, which seems to put it near the top of the scale in the Eurozone. They have a high level of public support. I personally find little evidence of incompetence, particularly when compared to the previous government. The incompetence and myopia lie with their European partners. Or, one suspects, it is not incompetence, but a conscious and concerted effort to force failure on the upstart leftists at the risk of shooting a hole in the bottom of the boat.

Running a printing press and distributing benefits is being done every day in Greece. If the grec is instituted and accepted for tax payments, the government will have done everything required administratively. It is not complex. (The low-tech version here is proposed partly to avoid technological bugs and the appearance of breakdown.) The option of accounts at the post office will be a new phenomenon, but one that is basically familiar, and difficulties there can only tangentially be ascribed to the ministerial level.

Businesses won't accept it.

Neither the authors of this criticism nor anybody else knows how quickly the grec would make it into widespread exchange. One suspects that if a business owner has taxes to pay, he or she will happily accept the grec, perhaps initially at a discount, but likely less of a discount over time.

It would be a sign of desperation.

Staying in the euro requires something to directly address the strictures imposed by that currency. Absent a release of the monetary stranglehold, particularly as tightened by the ECB with its liquidity squeeze, there is no prospect for recovery. Fiscal, monetary, exchange rate, and trade policies are not in the government's toolbox under the current regime. The American New Deal was run by pragmatic people who experimented, and it should be a model for Greece. Standing by so as appear not to be desperate (and to whom?) is truly incompetent.

Conclusion

There are many nuances and technical details of a grec program not included in this paper. None of these have caught the eye of critics and all have satisfactory resolution. The issue of a complementary currency ought to be gaining a wider audience as the internal contradictions of the euro become ever more evident.

One hopes that all proposals will receive a fair hearing. The most crucial question is: How does the currency establish its value? Once that is answered, a next question is, "How is it distributed?" After these two, it is all in the details.

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SUGGESTED CITATION:
Alan Harvey, "Updated proposal for a complementary currency for Greece (with response to critics)", *real-world economics review*, issue no. 71, 11 May 2015, pp.11-18, http://www.paecon.net/PAEReview/issue71/Harvey71.pdf

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China's Communist-Capitalist ecological apocalypse

Richard Smith [Institute for Policy Research and Development, London]

A ship sails across the junction of the polluted Yangtze River (left) and the Jialin River in Chongqing, China, September 7, 2012[1]

Abstract
This article seeks to explain why China's evironmental crisis is so horrific, so much worse that "normal" capitalism most everywhere else, and why the government is incapable of suppressing pollution even from its own industries. I begin with an overview of the current state of China's environment: its polluted air, waters, farmland, and the proximate causes: overproduction, overdevelopment, profligate resource consumption, uncontrolled dumping and venting of pollutants. I then discuss the political-economic drivers and enablers of this destruction, the dynamics and contradictions of China's hybrid economy, noting how market reforms have compounded the irrationalities of the old bureaucratic collectivist system with the irrationalities of capitalism resulting in a diabolically ruinous "miracle" economy. I conclude with a précis of the emergency steps the country will have to take to take to brake the drive to socio-ecological collapse, with dire implications for us all.

The first time Li Gengxuan saw the dump trucks from the nearby factory pull into his village, he could not believe his eyes. Stopping between the cornfields and the primary school playground, the workers dumped buckets of bubbling white liquid onto the ground. Then they turned around and drove right back through the gates of their factory compound without a word. In March 2008 Li and other farmers in Gaolong, a village in the central plains of Henan Province near the Yellow River, told a Washington Post reporter that workers from the nearby Luoyang Zhonggui High-Technology Co. had been dumping this industrial waste in fields

[1] *Daily Mail.* More photos of same at http://www.dailymail.co.uk/news/article-2199800/The-river-DID-run-red-Residents-Chinese-city-left-baffled-Yangtze-turns-scarlet.html#ixzz31PbZtLfZ

around their village every day for nine months. The liquid, silicon tetrachloride, was the byproduct of polysilicon production and it is a highly toxic substance. When exposed to humid air, silicone tetrachloride turns into acids and poisonous hydrogen chloride gas, which can make people dizzy and cause breathing difficulties. Ren Bingyan, a professor of Material Sciences at Hebei Industrial University, contacted by the Post, told the paper that “the land where you dump or bury it will be infertile. No grass or trees will grow in its place ... It is ... poisonous, it is polluting. Human beings can never touch it.” When the dumping began, crops wilted from the white dust which sometimes rose in clouds several feet off the ground and spread over the fields as the liquid dried. Village farmers began to faint and became ill. And at night, villagers said “the factory’s chimneys released a loud whoosh of acrid air that stung their eyes and made it hard to breath.” “It’s poison air. Sometimes it gets so bad you can’t sit outside. You have to close all the doors and windows,” said Qiao Shi Peng, 28, a truck driver who worried about the health of his one-year-old. Reckless dumping of industrial waste is everywhere in China. But what caught the attention of the Washington Post was that the Luoyang Zhonggui High-Technology Co. was a “green energy” company producing polysilicon destined for solar energy panels sold around the world. Indeed, it was a major supplier to Suntech Power Holdings, then the world’s leading producer of solar panels, and Suntech’s founder, Shi Zhengrong, topped the Hunrun list of the richest people in China in 2008.[2]

Silicon tetrachloride is an unavoidable byproduct of polysilicon production. But reckless pollution of farm villages is not unavoidable and today China is the only country in the world where such criminal behavior and cynical disregard for the health and lives of farmers and workers has become standard practice on a national scale by governments at every level, even as the government’s own environmental agencies decry such behavior and struggle, mostly in vain, to stop it. As one Chinese researcher told the Post, “If this happened in the United States, you’d be arrested.” But in China environmental regulations are regularly flouted by state-owned and private industries with the connivance of government officials at all levels while protesting farmers, workers, and environmental activists are arrested, jailed, beaten or worse and their lawyers with them. Polysilicon production produces about four tons of silicon tetrachloride liquid waste for every ton of polysilicon produced. In Germany, where Siemens produces solar panels, pollution recovery technology is installed to process the silicon tetrachloride waste and render it harmless. But such environmental protection technology is expensive. In 2008 the cost to produce polysilicon safely was about $84,500 a ton in Germany and would not have cost much less in China. Chinese companies have been producing it for $21,000 to $56,000 a ton, saving millions of dollars a month, by just dumping the toxic waste in rural areas on helpless village communities. Gaolong village is a mirror to China. It illustrates how the marriage of capitalism and Stalinist bureaucratic collectivism has created a diabolically destructive hybrid economic system, a rogue economy that is ravaging China’s environment, ruining the health of Chinese, rendering more and more of the country unlivable, driving the country to ecological collapse, and threatening to bring the whole planet down with it.[3]

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[2] Ariana Enjung Cha, “Solar energy firms leave waste behind in China,” *Washington Post*, 9 March 2008. All quotations are from this article.

[3] There’s no better illustration of this government-industry collusion and pollution’s catastrophic impact on the health of China’s people than journalist Chai Jing’s sensational new documentary on China’s smog *Under the Dome—Investigating China’s Smog* (Wumai diaocha: qiongding zhixia) which went online in late February and is being rightly hailed as China’s *Silent Spring* https://www.youtube.com/watch?v=T6X2uwlQGQM.

I. China self-destructs

For more than three decades, China's "miracle" economy has been the envy of the world or at least the envy of capitalist economists for whom wealth creation is the highest purpose of human life. Since 1979, China's GDP has grown by an average of just under 10% per year. Never, the World Bank tells us, has a nation industrialized and modernized so quickly or lifted so many millions out of poverty in such a short time. From a backward, stagnant, largely agrarian socialism-in-poverty, Deng Xiaoping brought in foreign investors, introduced market incentives, set up export bases, turned China into the light-industrial workshop of the world, and renovated China's huge state-owned enterprises (SOEs). Three and a half decades of surging economic growth lifted China from the world's tenth-largest economy in 1979 to No. 1 by 2014. What's more, after decades of export-based growth, China's 12th Five-Year Plan 2011-2015 sought to refocus the economy on internal market demand to realize Xi Jinping's "Chinese Dream" of national rejuvenation and turning China into a mass consumer society on the model of the United States. As China sailed right through the global near-collapse of 2008-9, hardly missing a beat, while western capitalist economies have struggled to keep from falling back into recession, even the Thatcherite *Economist* magazine had to concede that China's state capitalism may be in certain respects superior to capitalist democracies and is perhaps even the wave of the future.

But China's rise has come at horrific social and environmental cost. It's difficult to grasp the demonic violence and wanton recklessness of China's profit-driven assault on nature and on the Chinese themselves. Ten years ago, in an interview with Der Spiegel magazine in March of 2005, Pan Yue, China's eloquent young Vice-Minister of China's State Environmental Protection Agency (SEPA) told the magazine that "the Chinese miracle will end soon because the environment can no longer keep pace":

> We are using too many raw materials to sustain [our] growth... Our raw materials are scarce, we don't have enough land, and our population is constantly growing. Currently there 1.3 billion people living in China, that's twice as many as 50 years ago. In 2020 there will be 1.5 billion ... but desert areas are expanding at the same time; habitable and usable land has been halved over the past 50 years... Acid rain is falling on one third of Chinese territory, half of the water in our seven largest rivers is completely useless, while one fourth of our citizens do not have access to clean drinking water. One third of the urban population is breathing polluted air, and less than 20 percent of the trash in cities is treated and processed in an environmentally sustainable manner... Because air and water are polluted, we are losing between 8 and 15% of our gross domestic product. And that doesn't include the costs for health... In Beijing alone, 70 to 80 percent of all deadly cancer cases are related to the environment.

And criticizing western economists who reassure us that more growth is the key to repairing the environmental damage done from growth, Pan said:

> And there is yet another mistake ... It's the assumption that economic growth will give us the financial resources to cope with the crises surrounding the environment, raw materials, and population growth. [But] there won't be enough money, and we are simply running out of time. Developed countries with a per capita gross national product of $8,000 to $10,000 can afford that,

> but we cannot. Before we reach $4,000 per person, different crises in all shapes and forms will hit us. Economically we won't be strong enough to overcome them.[4]

Pan Yue's searing honesty got him sidelined but if anything, he understated the speed, ferocity and scale of China's ecological destruction, a destruction that extends far beyond China itself.

A. Consuming the planet to support unsustainable growth

Photo: *The Economist* 13 May 2008

As China's growth took off in the eighties and nineties, the industrial boom rapidly depleted the country's resources, especially lumber, oil and minerals, forcing Beijing to turn outward to feed its voracious engines of growth. The manic and thirsty industrialization boom in China's northern industrial cities drained China's northern fresh aquifers leaving some 600 cities including Beijing facing dire water shortages while severely polluting most remaining reserves. Profit-hungry loggers cut down most of what was left of China's forests, recklessly denuding mountains and precipitating such extensive flooding and loss of life in 2009 that the government banned domestic logging. Chinese loggers then turned to plundering Siberia, Malaysia, Indonesia, even New Guinea and parts of Africa. China had little oil to begin with so industrialization and automobilization quickly turned China from a modest oil exporter into a net importer in 1993 and the world's leading oil importer by 2013. China's iron ore, copper and other critical industrial mineral reserves have also been rapidly drawn down forcing the country to import growing quantities of minerals. In result, today, with 20 percent of the world's population, China is now by far the world's largest consumer of marketed primary industrial raw materials (cement, metal ores, industrial minerals, fossil fuels, and biomass).

[4] "The Chinese miracle will end soon," *Der Spiegel* 7 March 2005: www.spiegel.de/speigel/0,1515,345694.html.

China consumes more than 32 percent of the world's total of these resources, nearly four times as much as the U.S., the second largest consumer. China consumes just over half the world's coal and a third of the world's oil. China is the leading producer and consumer of steel with 46 percent of world output and now relies on imports for 77 percent of its iron ore. [5] China has become the world's largest consumer of lumber and forest products leveling forests from Siberia to Southeast Asia, New Guinea, Congo, and Madagascar. Greenpeace concluded on current trends "future generations will be living on a planet without ancient forests." [6]

Of course China has the world's largest population and is industrializing from a comparatively low level just three decades ago so it's hardly surprising that it would consume lots of resources to build infrastructure and modernize. But the fact is, most of these resources have been squandered on a stupendous scale and for all the waste and pollution, most Chinese have gotten surprisingly little out of it all.

The disposables revolution and "The Great Acceleration" of global consumption

For a start, look at the export bases that have powered China's rise. When China launched its "reform and opening" (*gaige kaifang*) in the early 1980s and invited foreign investors to set up joint-ventures and Special Economic Zones, China's combination of ultra-cheap labor plus few-to-no environmental restrictions attracted many of the world's dirtiest and least sustainable industries. Steel, coke, aluminum, cement, chemicals and petrochemicals, metal plating, leather tanning, plastics, paints and finishes, synthetic fibers and textile production, fabric dyeing, paper production, along with auto battery and electronics recycling -- most of the toxic and smokestack industries facing increasingly tough environmental restrictions at home in the U.S. and Europe, relocated to China after 1980.[7] Seventy percent of the world's e-waste is dumped in China.

On top of this, China's masses of cheap migrant workers were a magnet for the world's most labor-intensive manufacturing and assembly industries. By the 1990s China had more than 104 million manufacturing workers, about twice as many as the United States, Canada, Japan, Germany, France, Italy, and the UK combined. And they worked 8-16 hour days, often 7 days a week, for an average of $0.57 per hour in 2002, by one estimate, less than the handloom operators earned in the early Industrial Revolution in England. This "China Price" set the global floor for high-volume light-industrial manufacturing from the 1980s.[8]

The price collapse spurred the biggest boom in global consumption in history and this in turn accelerated global resource plunder on an unprecedented scale. The sudden availability of such a huge pool of ultra-cheap workers also spurred a minor industrial revolution enabling producers to annihilate most of the remaining categories of durable goods and replace them with cheaper, disposable replacements. With the disposables revolution, local tailors and alteration shops, shoe repair shops, appliance repair shops, TV repairmen and the like all but vanished in the West as it became cheaper to toss it and replace it than repair it. Take clothes: "Fast Fashion" (aka "Trashion Fashion") from H&M, Target, Zara's and others, now

[5] Elizabeth Economy and Michael Levi, *By All Means Necessary,* Oxford 2014, chapters 3 & 4.
[6] Craig Simons, *The Devouring Dragon*, New York, 2013, p. 9 and chapters 7&8.
[7] Joseph Kahn and Mark Landler, "China grabs west's smoke-spewing factories," *New York Times*, 21 December 2007. William J. Kelly and Chip Jacobs, *The People's Republic of Chemicals* (Los Angeles: Vireo 2014).
[8] Alexandra Harney, *The China Price*, New York, 2008, pp. 8-9.

rules the women's apparel market with clothes so cheap it's often not worth the cost of dry-cleaning them. As Elizabeth Kline relates in her recent book *Overdressed: the Shockingly High Cost of Cheap Fashion* "seasonal shopping patterns have given way to continuous consumption." Zara delivers new lines twice a week to its stores. H&M and Forever 21 stock new styles *every day*. In Kline's words: "Buying so much clothing and treating it as if it is disposable, is putting a huge added weight on the environment and is simply unsustainable." To say the least. The U.S. cotton crop requires the application of 22 billion pounds of toxic pesticides every year. Most fiber is dyed or bleached, treated in toxic chemical baths to make it brighter, softer, more fade resistant, water proof, or less prone to wrinkles. Upholstery fabrics and children's pyjamas are treated with ghastly chemicals to make them stain resistant or fireproof. These toxic baths consume immense quantities of chemicals and water and it goes without saying that in China, the chemicals are routinely just dumped in rivers and lakes, untreated, just like that silicon tetrachloride poured out on Li Guangxuan's cornfield. Then after all the chemical treatments, the fabrics have to be dried under heat lamps. These processes consume enormous quantities of energy. The textile industry is one of the largest sources of GHG emissions in the world, and it's growing exponentially. In 1950, when there were about 2.5 billion people on earth, they consumed around 10 million tons of fabric for all uses. Today, we are 7 billion, but we consume more than 70 million tons of fabric annually, nearly 3 times as much per person as we consumed in the fifties. Producing 70 million tons of fabric consumes astounding quantities of resources including more than 145 million tons of coal and between 1.5 and 2 trillion gallons of fresh water, every year. Synthetic fibers like polyester and such (now 60 percent of the market) are the worst: They consume between 10 and 25 times as much energy to produce as natural fibers. In short, "fast fashion" is speeding the disposal of planet Earth.[9]

And what's true for China's garment industry is true for most of the rest of China's export industries. From cheap disposable shoes and clothes, toys, tools, housewares, Christmas junk and flimsy plastic appliances to meticulously made and expensive but nevertheless designed-to-be-obsolesced iPhones and 60 inch flat-screen TVs, most of the world's light industrial goods are Made in China and they are, for the most part, deliberately designed-to-be-obsolesced, unrepairable, mostly unrecyclable. After they're short life, they all end up piled on the world's ever-growing garbage mountains, sent back to China in containers filled with E-trash to be "recycled" by children melting the plastic off mother boards over open fires, or left floating around the world's oceans in giant plastic gyres over vast stretches of oceans, hundreds of feet deep.[10]

Scenes of planetary destruction from the 12th Five-Year Plan

When we turn to China's domestic economy, the waste is breathtaking. As China's economy opened to the West and China's exports began returning billions of dollars in foreign exchange, Beijing launched wave after wave of gargantuan development projects: dams, airports, rail systems, roads, subways, sewerage systems, new industries, new housing, new cities, new ports, and more. China's supercharged government planners have been showcasing China's engineering prowess and economic might by building the world's biggest

[9] *Overdressed*, New York 2013, pp. pp. 3, 124-125. Energy consumption: FAO, cited in "Fabric and your carbon footprint, *O Ecotextiles*, 10 March 2013, at http://oecotextiles.wordpress.com/2013/10/03/fabric-and-your-carbon-footprint/.
[10] Niu Yue, "China No 1 dumper of plastic into ocean," *China Daily*, February 19, 2015.

dams, the tallest skyscrapers, biggest airports, longest and highest bridges, longest rail and road networks, longest tunnels, etc. Since Deng Xiaoping launched his "Four Modernizations of agriculture, defence, science and technology" and reform and opening up, the country has been in perpetual Great Leap Forward mode: Five-Year plans have set annual industrial growth rates of 8 percent and promoted successive sets of "pillar" industries -- autos, electronics, petrochemicals, clean energy and so on. In the current 12th Five-Year Plan (2011-2015) the State Council calls for development of "seven strategic emerging industries" including (1) energy efficient and environmental technologies like "clean coal," (2) next generation IT and cloud computing and the "Internet of Things," (3) biotechnology, (4) high-tech manufacturing of vehicles and aircraft, expanding high-speed rail service to 45,000 kilometers, expanding motor expressways to 83,000 kilometers, (5) new-generation nuclear power, more solar and wind energy systems, (6) new materials including development of rare earths, special glass and ceramics, high-performance fiber and composite materials, (7) new-energy vehicles: motor batteries, drive motors, electronic controls, plug-in hybrid and electric vehicles, low-emissions vehicles.[11]

No doubt, the Chinese have benefited from new housing, new infrastructure, new schools, hospitals and so on. But the government has also squandered astounding quantities of resources building entire industries China does not need, building useless vanity projects, superfluous housing, redundant infrastructure and more. From the start this investment boom has been characterized by uncontrolled overproduction and out-of-control pollution.

Scene 1: The "car craze" China and planet Earth did not need

The 12th Five-Year Plan calls for "enhancing China's independent capacity to manufacture automobiles, domesticating production of all key parts," for "large-scale commercialization" of energy efficient and hybrid vehicles, for "building ... world-famous brands and core competencies" and so on. Hybrid or not, this is an industry the Chinese do not need. Up to 1979 China produced around 160,000 motor vehicles per year with trucks and buses accounting for 90 percent of the output. People got around on bicycles, busses and trains. In 1990, China had just 5.5 million cars, trucks, and buses on the road. By 2013 China became the world's largest auto assembler cranking out 18.7 million cars and light vehicles, more than twice the number produced in the U.S. in that year. By 2013, China had 240 million cars on its roads, almost as many as in the United States and estimates are that China could have 390-532 million cars on the road by 2050. The question is, why does China need anything like such a huge auto industry? The lead headline of *Bloomberg News* for April 9, 2014, citing the latest IPCC report, was "Cars become the biggest driver of greenhouse-gas increases." What's wrong with this picture?

The automobilization of China has brought three profound changes. First, it has dramatically lengthened the time it takes to get anywhere in China's gridlocked cities (average speed on Beijing's ring roads is 9 mph) and created epic, world-historic traffic jams on highways feeding

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[11] *State Council Decision on Accelerating the Development of Strategic Emerging Industries*, October 2010 at http://www.gov.cn/zwgk/2010-10/18/content_1724848.htm.
State Council 12th Five Year Plan (FYP) on Development of Strategic Emerging Industries, July 2012 at http://www.gov.cn/zwgk/2012-07/20/content_2187770.htm.
MOF and NDRC Interim Measures for the Administration of Special Funds for Strategic Emerging Industries, December 2012 at
http://jjs.mof.gov.cn/zhengwuxinxi/zhengcefagui/201301/t20130124_729883.html.

into Beijing and other cities. One jam-up near near Beijing in 2010 stretched over 100 kilometers and lasted for *two weeks*. Secondly, it has added a dense new layer of smog on top of the already thick layers of smog from coal combustion smothering China's cities. And thirdly, it has paved over much-needed farmland and wetlands and wasted enormous resources China, and the world, does not have to waste. This did not have to happen.

The Communist Party promoted joint-venture auto production as a "pillar" industry in the 1990s for two reasons: First, once the government embarked on its market-reform strategy, abandoning lifetime employment, it needed to push growth to generate private and state-sector jobs, like capitalist governments everywhere. Speaking in November 2013, Prime Minister Li Keqiang stressed that:

> Employment is the biggest thing for well-being. The government must not slacken on this for one moment ... For us, stable growth is mainly for the sake of maintaining employment.

Auto manufacture and related industries now account for 1 out of every 8 urban jobs in China excluding road-building, another big employer.

Secondly, the Party promoted the car craze to bolster status-seeking middle-class political support. In the 1980s, the Party supported a modest consumerism. But after the Tienanmen uprising in the spring of 1989, the government opted for expansive consumerism to placate the middle classes. Hence the car craze, followed by the airline craze, the shopping mall craze, the high-speed train craze, the foreign tourism craze, and so on. It is no small irony that just as the CCP was ramping up auto production and banning bicycles from public roads in the 1990s, European countries were moving in the opposite direction -- barring cars from many central city streets, promoting bicycles and car sharing, and expanding public transit. China didn't begin expanding its urban subways in earnest until the late 2000s, after two decades of automobilization had gridlocked its cities and dramatically increased air pollution.

Beijing 1981, before the car craze. Photo: china-underground.com.

Beijing 2013: the 3rd ring road in the midst of the car craze. According to the Beijing Municipal Transportation Commission, 44% of the capital's motor vehicles travel less than 5 km per trip – a trip that one used to be able to make in twenty minutes by bicycle. Photo credit: John Metcalfe, Atlanticcities.com, January 15, 2013

Copenhagen 2011 (after the car craze). Photo: sf:streetsblog.org

Scene 2: The roads not taken

As China was racing to surpass the U.S. as the world's largest car market, the Communist Party decided that China should also "catch up and overtake" the U.S. Interstate highway system as well. So by 2010 China built 53,000 miles of intercity expressways, exceeding the U.S. Interstate highway system's 47,000 miles. But this program, built at huge cost and by tearing through cities and paving over thousands of square miles of valuable farms, wetlands and so on, is yet another ill-conceived boondoggle because except for a few highways near major cities like Beijing or Shenzhen, China's expressways are often little used. In places, farmers dry their crops on empty super highways. McClatchy's Beijing bureau chief Tom Lasseter writes under this picture:

Photo: Tom Lasseter

> Do you see any cars along this road? One often hears about the traffic jams in the big cities of China. But here's the flip side of the coin: in rural towns and cities in China, local officials like to build big showcase projects, displaying grandiosity but little utility. I was in the city of Fengzhen in Inner Mongolia yesterday. By Chinese standards, it is a small place, maybe 200,000 people. So imagine my surprise as we leave the downtown to come across this eight-lane highway going past a mammoth new City Hall. Nary a car on it. A passerby could keel over with a stroke on that highway and not risk getting run over for many hours. The city is already in hot water for building a power plant that Beijing says is unneeded. Across China, there are plenty of largely empty hotels, brand new empty highways, modern airports that lose money for lack of traffic, etc. What happens is that unelected local officials, not particularly responsive to local needs, find that pharaonic projects give their municipalities a luster that can attract investment, which is their path to promotion within the one-party system. So for every eight-lane road you see like this, there is a happy bureaucrat pondering a bright career ahead.[12]

How much cement has been poured, how much iron rebar has been forged, and how much coal has been burned to produce the energy to pave over so much of China – for no useful purpose whatsoever?

[12] Tom Lasseter, "Empty highways," *McClatchy News*, August 24, 2006, 11:33PM at http://blogs.mcclatchydc.com/china/2006/08/empty_highways.html.

Scene 3: Half-empty trains and subways

And how much steel and aluminum and copper and cement and electricity have been consumed to build China's huge national network of high-speed trains? The 12th FYP budgeted hundreds of billions of dollars to build more than 16,000 miles of high-speed rails by 2020. By 2013, China had already built more high-speed train than the rest of the world combined. But this too is more make-work and prestige project than modernizing necessity. High-speed trains are hugely expensive to build and operate and consume more than twice as much electricity to run as regular trains, so tickets can cost ten times the price of regular train tickets in China. Since few Chinese can afford such prices, the trains often run at half capacity or less. Chinese transportation experts say the government is throwing money away on bullet trains, money that could be better spent on regular railroads, especially cargo lines, and developing mass transit in and around cities. [13] NYU economist Nouriel Roubini told *Reuters* in 2011:

> I was recently in Shanghai and I took their high-speed train to Hangzhou," he said, referring to the new Maglev line that has cut traveling time between the two cities to less than an hour from four hours previously. "The brand new high-speed train is half-empty and the brand new station is three-quarters empty. Parallel to that train line, there is also a new highway that looked three-quarters empty. Next to the train station is also the new local airport of Shanghai and you can fly to Hangzhou," he said. There is no rationale for a country at that level of economic development to have not just duplication but triplication of those infrastructure projects.[14]

Duplication, triplication, overconstruction and waste is everywhere in China. Even with subways. Twenty-two cities already have subway systems and money was budgeted in 2012 to build subways in another 16 by the end of 2018. Wang Mengshu, a subway engineer from the Chinese Academy of Engineering who helped design China's first subway in Beijing in 1965, says these are completely unnecessary, too expensive, again more prestige projects than public service: "Second, third-, fourth-tier cities ... those cities don't need to build subways. Even if they can afford to build them, they can't afford to run them. But a lot of places think that if they have a subway, then they are a big city."[15]

[13] Professor Zhao Jian of Beijing Jiaotong University says that "It is unwise to continue building high-speed rail lines while the current high-speed network has a hard time getting enough passengers and is operating at a loss. . . The country has built more than 10,000 kilometers of high-speed rail lines and most lines are losing money because of inadequate demand." Some lines run at only 30% of capacity he said, and even the busiest, such as the train from Beijing to Shanghai, "will run a loss for a long time. . . The rush to build high-speed rail networks indicates that the old investment-driven growth model has hardly changed." Sun Wenjing, "Government throwing money away on bullet trains, expert says," *Caixin,* 10 July 2014 at http://english.caixin.com/2014-07-10/100702343.html.

[14] Kevin Lim, "'Meaningful probability' of a China hard landing: Roubini," *Reuters,* 13 June 2011.

[15] Wang is quoted in Tania Branigan, "Riding Beijing's subway end to end: 88km of queues and crushes on 20p ticket," *Guardian*, 10 September, 2014 at http://www.theguardian.com/cities/2014/sep/10/-sp-beijing-subway-china-metro-queues-ticket-investment.

Scene 4: China as "major aerospace and air-travel power"

The 12th Five-Year Plan grandiosely calls for a push to make China a "major aerospace and air-travel power." Plans call for nearly a hundred new airports, thousands of new airliners, thousands of helicopters, business jets and small aircraft of all varieties. Boeing estimates Chinese carriers will need more than 5260 new airliners alone – worth $670 billion by 2031.[16] Great for Boeing. But not only did China not "need" this industry, it's just suicidal for developing countries like China to repeat the same environmental mistakes as the West did. The UN IPCC calculates that aviation is currently responsible for about 3.5% of anthropogenic climate change and says that if present trends continue this share will grow to between 5% and 15% by 2050 while the absolute contribution of aviation generated emissions will soar. Aviation is already the fastest growing source of global CO2 emissions and if it continues to grow at its current rate it will overwhelm all the cuts engineers have managed to make elsewhere.[17] There are not currently nor on the horizon any practical alternatives to kerosene-based fuels for commercial jet aircraft. This is why after surveying the literature on potentials for GHG mitigation in other forms of transportation, environmental journalist George Monbiot concludes that while some forms of transport can be rendered a bit greener, there's virtually nothing we can do with aviation with present or foreseeable technologies:

> There is, in other words, no technofix. The growth in aviation and the need to address climate change cannot be reconciled. Given that [efficiency gains tend to be canceled out by growth] a 90 percent cut in emissions requires not only that growth stops, but that most of the planes which are flying today are grounded. I recognize that this will not be a popular message. But it is hard to see how a different conclusion could be extracted from the available evidence.[18]

In a world where climate scientists tell us we need to cut global CO_2 emissions by 90 percent by 2050, global aviation emissions are on course to double by 2030. It will be suicidal to let this happen. Absent some technical miracle, the only way to suppress aviation emissions is to suppress the numbers of people jetting around the planet, not add hundreds of millions of Chinese to this jet set. Coming to grips with this reality may not be popular in China or the U.S. but the alternative is not going to be popular either.

Scene 5: Construction frenzies, ghost cities, and the mother of all real estate bubbles

Yet none of the above compares with the resources squandered on the construction boom of recent decades. China's construction juggernaut has been gobbling up China's best peri-urban farmland, expelling tens of millions of farmers and urban residents and consuming staggering quantities of resources to build unneeded housing, shopping malls, industrial parks, office buildings, power plants and infrastructure in a country already bursting with

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[16] James Fallows, *China Airborne*, New York, 2012, pp. 28-29. David Barboza, "Airports in China hew to an unswerving flight path," *New York Times*, 3 April 2013. *Bloomberg News*, "China plan seeks to bolster airports, locally-produced airplanes," 21 January 2013 at http://www.bloomberg.com/news/2013-01-21/china-plan-seeks-to-bolster-airports-locally-produced-airplanes.html.
[17] IPCC, *Aviation and the Global Atmosphere: A Special Report of the Intergovernmental Panel on Climate Change,* Cambridge UK 1999, at http://www.grida.no/climate/ipcc/aviation/index.htm. George Monbiot, *Heat,* Cambridge UK 2007, p. 174.
[18] Monbiot, *Heat*, p. 182 and sources cited therein.

overpopulated, polluted megacities.[19] Millions of urban residents were cleared out of Beijing and Shanghai which were completely rebuilt with thousands of skyscrapers, apartment blocks, highways and shopping malls.[20] Cities and provinces compete to build cloud-piercing skyscrapers even if they have no prospective tenants for them. By 2020, 12 of the planet's 20 tallest towers are expected to be in provincial cities like Shenyang, Wuhan, and Suzhou. The office vacancy rate in Shenyang is nearly 30 percent, yet three more towers, all bigger than the Chrysler building, are under construction, and another 12 are on the drawing boards. Beijing's premier architectural atrocity, the Rem Koolhaas-designed CCTV tower – dubbed "Big Underpants" by the locals – sits nearly empty since it was built in 2008. Cities compete to build ersatz Wall Street "financial centers" as in Beijing (abandoned) and Tianjin (abandoned unfinished). Stunningly lavish offices for cadres are built everywhere (photos below). China's coast has multiple redundant ports, some nearly empty, but more are planned. Since the 1980s, China has built enough new housing to re-house the entire population but the construction boom has become a self-sustaining perpetual engine of construction for the sake of construction, supply with no demand. And not just miles of empty apartment blocks but entire "ghost cities" complete with office towers, hospitals, schools, futuristic airports, museums, universities, libraries, theaters, sports fields, miles and miles of apartment towers and subdivisions of McMansions – but almost no people.[21] Twenty-one percent of China's urban residents, the wealthy and middle classes, own two urban apartments, some own three or four – all bought for speculation, not to live in, not vacation homes. More than 22.4 percent of urban apartments and houses remained vacant in 2014. [22] By one estimate, more than 64 million surplus apartments had been built in China, enough to house almost half the population of the United States, yet millions more are under construction.[23] Economists have warned that what China is really building is the biggest real estate bubble in history. CBS interviewed Wang Shi, CEO of China Vanke, China's biggest home builder (which makes him the world's biggest homebuilder) who told CBS's Lesley Stahl that this can't last, "this is a bubble, for sure." When it bursts, "it will be a disaster, a disaster." [24]

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[19] In the decade from 2000 China's cities expanded by over 80 percent. A national land survey found that 130,000 square kilometers of farmland, equal to half the area of Germany, was paved over in the urbanization frenzy between 1996 and 2009 – and it hasn't slowed since. Mandy Zuo, "Stop concreting over prime farmland, China's big cities told," *South China Morning Post*, 9 November, 2014. Cui Zheng, "Scientists issue warning over development of coastal wetlands," *Caixin*, 25 November 2014.
[20] See Jasper Becker, *City of Heavenly Tranquility*, Oxford 2008, chapters 17 and 18.
[21] See Darmon Richter, "Welcome to Ordos: the world's largest 'ghost city' [China]," *The Bohemian Blog*, 13 February 2014 at: http://www.thebohemianblog.com/2014/02/welcome-to-ordos-world-largest-ghost-city-china.html.
[22] "Housing oversupply causing major crisis for Chinese economy, *NTD.TV*, 16 May 2014 at http://www.ntd.tv/en/programs/news-politics/china-forbidden-news/20140516/143998-housing-oversupply-causing-major-crisis-for-chinese-economy-.html. Eg. George Steinmetz, "Let a hundred McMansions bloom," *New York Times Magazine,* 21 September 2014. Neil Gough, "A muddy tract now, but by 2020, China's answer to Wall Street," *New York Times,* 3 April, 2014.
[23] Lillian Liu, "A question of time, *FinanceAsia*, 8 September 2010 at http://www.financeasia.com/News/231364,a-question-of-time.aspx. Vincent Fernando, CFA, "There are now enough vacant properties in China to house over half of America," *Business Insider*, 8 September 2010 at http://www.businessinsider.com/there-are-now-enough-vacant-properties-in-china-to-house-over-half-of-america-2010-9. Robin Banerji and Patrick Jackson, "China's ghost towns and phantom malls," *BBC News Online*, 13 August 2012 at http://www.bbc.com/news/magazine-19049254. Yifei Chen, "Chasing ghosts: where is China's next wave of empty 'new towns'?" *South China Morning Post*, February 13, 2015.
[24] "China's real estate bubble," *CBS 60 Minutes*, 11 August 2013 at http://www.cbsnews.com/videos/chinas-real-estate-bubble/. Gus Lubin, "Satellite pictures of the empty Chinese cities where home prices are crashing," *Business Insider*, 10 December 2011, 1:48PM at http://www.businessinsider.com/china-ghost-cities-2011-11#. David Barbaroza, "Chinese city has many buildings but few people," *New York Times*, 9 October 2010.

Zhengzhou ghost city, Henan, 2013

Harbin state-owned pharmaceutical company office

Versailles in Harbin[25]


15 story high brass-clad 2,300 ton "Puffer fish" tower, Yanzhong, Jiangsu province [26]

[25] Joanna Corrigan, "Oh la la! Chinese state factory decked out to look like the Palace of Versailles (much to the disgust of neighbours)," *Mail Online,* 8 September 2011 at http://www.dailymail.co.uk/news/article-2034679/Chinese-state-factory-decked-look-like-Palace-Versailles.html.

[26] Chris Buckley, "As China vows austerity, giant brass fish devours $11 million" *New York Times*, 12 October 2013.

Scene 6: Tofu construction

Construction is breathtakingly fast in China but it can also be breathtakingly sloppy, dangerous, and destined to a short lifespan. That's because China's local building department regulators, like food safety and environment regulators, are subordinate to local officials who partner with and profit off the very construction companies the regulators are nominally supposed to regulate. In result, safety is often subordinated to speed and cost, with predictable results. The Chinese call it *doufazha,* "tofu" construction. Bridges collapse regularly. Between July 2011 and August 2012, eight major bridges collapsed. An Australian reporter counted 4 collapsed bridges in just *nine days* in July 2012.[27] High-speed railway bridges collapse. Buildings collapse. Some just topple over. Millions of peasants have been cleared off the land and dumped into "new towns" around cities where the shoddy new housing is already crumbing as the displaced farmers move in. In 2010, China's Ministry of Housing admitted the low quality of construction and warned that "China's newly-built houses can only last for 20 or 30 years.[28] Have the Chinese invented disposable housing?

This building collapse in Fenghua city, Zhejiang province on April 4, 2014 buried 7 people, killing one. Inspectors warned the rest could also collapse. Photo: China Daily

[27] Zarathustra, "China's crumbing infrastructure model," *Macrobusiness,* 28 July 2012 at 9:49AM at http://www.macrobusiness.com.au/2011/07/is-chinas-growth-model-a-train-wreck/. *Wall Street Examiner* reporter/blogger Russ Winter posted several photos of collapsed bridges in his "Yes, China is truly different" *Winter Economic and Market Watch*, 28 August 2012 at http://www.wallstreetexaminer.com/blogs/winter/?p=5290.

[28] Lu Chen, op. cit. After the collapse of an apartment in Fenhua, Zhejian province in April 2014, officials warned of a "coming wave of such accidents as the 'fast food' buildings built in the 1980s and 1990s enter their 30s and 20s." Building safety experts warned people not to purchase apartments in certain localities known to be particularly risky. Most "won't last 50 years, or in some cases about 25 years," and they present constant safety hazards. Zheng Fengtian, "Weak buildings threaten life," *China Daily*, 11-14 April 2014.

In June 2009, this nearly finished 13-story apartment building in Shanghai just toppled over killing a construction worker. Photo: Reuters

March 27, 2008: A 60-meter section of Jintang Bridge fell onto a cargo ship near the eastern port city of Ningbo, east of China's Zhejiang province. Photo credit: AP Images

Officials call for tougher regulation but most Chinese blame corruption. Zhu Lijia, a professor at the Chinese Academy of Governance in Beijing says bid rigging is the norm and there are no checks or balances on the procurement process. "We do have relevant laws regarding the bidding process, but there is a lack of enforcement. The bidding process is only a show." A college student, Zeo Niu, interviewed by National Public Radio after a major bridge collapse in 2012, knew the system well. Her uncle runs a construction company in central China. She said using substandard material while charging for high-quality goods is routine. "What really upsets her," she said, "is that so many projects collapse, people just become overwhelmed. I will never remember those victims' names in this accident, and people won't remember it. It will all be buried by the next accident."[29]

[29] Frank Langfitt, "Chinese blame failing bridges on corruption," *National Public Radio*, 29 August 2012 at http://www.npr.org/2012/08/29/160231137/chinese-blame-failed-infrastructure-on-corruption.

"Twenty more years of roaring growth"?

In the *Wall Street Journal* of August 20, 2014, Justin Lin Yifu, an economist and close advisor to senior leaders in Beijing stated that he's confident China can sustain its recent 8% per year growth rate for the foreseeable future. He predicts "20 years of roaring growth" for China. Really? Where does Mr. Yinfu think the resources going to come from for this scale of consumption? As it happens, in 2011 the Earth Policy Institute at Columbia University calculated that if China keeps growing by around 8 percent per year, Chinese average per capita consumption will reach current US level by around 2035. But to provide the natural resources for China's 1.3 billion to consume on a per capita basis like America's 330 million consume today, the Chinese -- roughly 20 percent of the world's population -- will consume as much oil as the entire world consumes today. It would also consume more than 60 percent of other critical resources (Table 1).

Table 1: Annual consumption of key resources in China and U.S., latest year, with projections for China to 2035, compared to current world production

Production Consumption* Commodity	Unit	Consumption latest year		Projected consumption 2035	
		U.S	China	China	World
Grain	Million tons	338	424	1,505	2,919
Meat	Million tons	37	73	166	270
Oil	Million Barrels per day	19	9	85	86
Coal	Million Tons of Oil Equiv.	5	1,714	2,335	3,731
Steel	Million Tons	102	453	456	1,329
Fertilizer	Million Tons	20	49	91	214
Paper	Million Tons	74	97	331	394

*Projected Chinese consumption in 2035 is calculated assuming per-capita consumption will be equal to the current U.S. level, based on projected GDP growth of 8 percent annually. Latest year figures for grain, oil, coal, fertilizer and paper are from 2008. Latest year figures for meat and steel are from 2010.

Source: Earth Policy Institute, 2011

How can this happen? What would the rest of the world live on? Already, as resource analyst Michael Klare reviews in his latest book, *The Race for What's Left* (2012) around the world existing reserves of oil, minerals and other resources "are being depleted at a terrifying pace and will be largely exhausted in the not-too-distant future."

B. Airpocalypse now

"Who cares about GDP if we can't live here?"

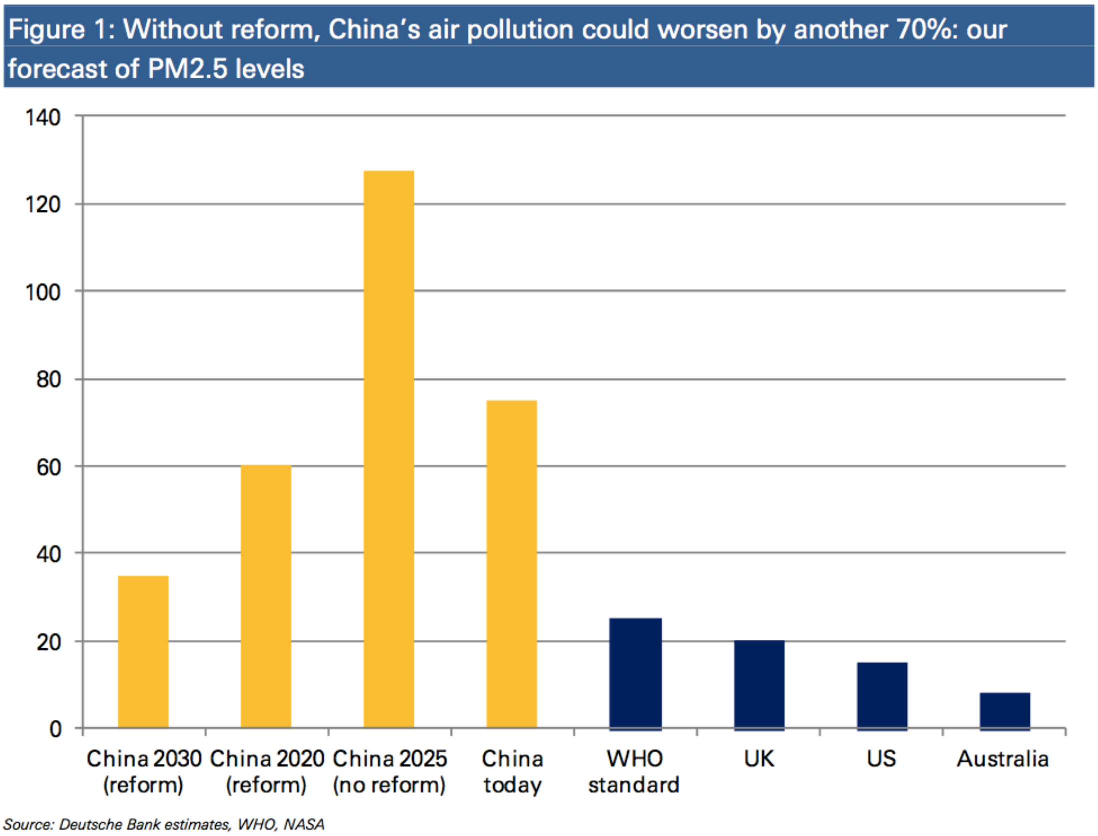
Decades of coal-powered industrialization combined with the government-promoted car craze since the 1990s have brought China the worst air pollution in the world. Scientists have compared north China's toxic smog to a "nuclear winter" and the smog is also sharply reducing crop yields. Lung cancer is now the leading cause of death in Beijing and nationally pollution-induced lung disease is taking the lives of more than 1.2 million people a year. With 20% of the world's population, China now burns as much coal as the rest of the world put together. Twenty of the world's thirty smoggiest cities are in China.

Ironically, China is also a "green-technology" leader, the world's largest producer of both windmills and solar panels. Yet in China these account for barely 1% of electricity generation in China. Coal presently supplies 69 percent of China's total energy consumption, oil accounts for 18%, hydroelectric 6 percent, natural gas 4 percent, nuclear less than 1 percent, and other renewables including solar and wind 1 percent.[30] China currently burns four billion tons of coal a year; the U.S. burns less than 1 billion; the EU about 0.6 billion. China has marginally reduced the carbon intensity of production in recent years by installing newer more efficient power plants but these gains have been outstripped by relentless building of more power plants. To make matters worse, even when power plants are fitted with scrubbers to reduce pollution, operators often don't turn on the scrubbers because these cut into their profits.

While government plans call for reducing coal's share of the energy mix from 69 percent to 55 percent by 2040, it projects that China's absolute coal consumption will still rise by more than 50 percent in the same period in line with China's projected economic growth of around 7.7 percent per year. The World Health Organization considers air pollution above 25 micrograms of particulate matter per cubic meter (PM2.5) to be unsafe. China's current national average is 75 micrograms but particulate levels in many cities averages in the hundreds. In the winter of 2013 China suffered from the worst air pollution in its history as half the country, nearly the

[30] U.S. E.I.A., *China,* updated 4 February 2014 at http://www.eia.gov/co.

whole of northern and eastern China was smothered in dense smog for weeks at a time. Smog alerts were called in 104 cities in 20 of China's 30 provinces as schools and airports closed in Beijing, Shanghai and other cities. In January PM2.5 levels in Beijing reached 900 micrograms per cubic meter. As Beijing was choking in smog in the winter of 2013, Deutsche Bank analysts gloomily concluded that even if China's economy slowed to 5 percent growth per year from its current 7.6 percent rate, coal consumption would still nearly double and China's smog could increase by as much as 70 percent by 2030 (Figure 1).[31]



Source: Quartz, http://qz.com/61694/chinas-nightmare-scenario-by-2025-air-quality-could-be-much-much-worse/.

China's leaders thus face and intractable dilemma. They can't keep growing the economy without consuming ever more coal and oil and gas. Yet the more fossil fuels they burn, the more uninhabitable China's cities become, the more Chinese flee the country, and the faster China's emissions are driving global warming.

Cooking the planet to produce junk no one needs

China surpassed the U.S. in 2007 to become the world's leading CO_2 emitter. By 2013, China's emissions were already nearly double those of the U.S. The EIA calculates that if even if China grows at only 5.7 percent per year, 2 percent less than its current rate and

[31] Lily Kuo, "China's nightmare scenario: by 2025 air quality could be much much worse," posted 12 March 2013 on *Quartz* at http://qz.com/61694/chinas-nightmare-scenario-by-2025-air-quality-could-be-much-much-worse/. Wang Yue, "China unlikely to reduce coal use in the next decade," *Chinadialogue.org*, 10 February 2014 at https://www.chinadialogue.net/blog/6718-China-unlikely-to-reduce-coal-use-in-the-next-decade/esn. U.S. EIA, *China,* 4 February 2014, op cit.

about half the average rate it grew over the past decade, its CO_2 emissions would still soar to almost 15 billion tons by 2040, almost triple those of the U.S.[32] By 2013 China's per capita emissions surpassed those of Europe. With just 20 percent of the world's population, China already accounts for almost 30 percent of global CO_2 emissions.

Coal-to-gas bases will doom the climate

Under pressure to reduce smog and greenhouse emissions but still maintain economic growth, the government has begun talking about putting a cap on coal emissions. But this cap would be pegged to expected growth and demand, so coal use is likely to continue rising for years.[33] Yet the most worrisome threat to reducing emissions comes from the government's newest plan to "clean up its cities" by building dozens of huge "coal-gasification bases" in Shanxi, the Ordos Basin, Inner Mongolia, Xinjiang and other remote areas. These plants will burn coal directly to generate electricity *in situ* and convert coal to liquid fuels like "syngas" (like natural gas but from coal) which will then be transported to the cities to be burned in power plants, factories and cars. These huge bases, some encompassing areas larger than the states of Delaware and Connecticut, will be the largest fossil fuel development projects in the world. And far from reducing coal use, scientists say, these complexes consume so much coal-fired energy to produce the syngas and other chemicals that they generate almost twice as much CO_2 emissions as if the coal were just directly burned in power plants.[34] Furthermore, water-intensive coal extraction in the new coal bases in northern and western provinces threatens to seriously aggravate China's already severe water crisis in these regions.[35] And as if all this weren't enough, the government has also declared its intention to develop "fracking" wherever possible in China.[36]

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[32] Zeke Hausfather, "Global CO2 emissions: increases dwarf U.S. reductions," *Yale Forum on Climate Change & the Media*, 2 July 2013 at http://www.yaleclimatemediaforum.org/2013/07/global-co2-emissions-increases-dwarf-recent-u-s-reductions/.

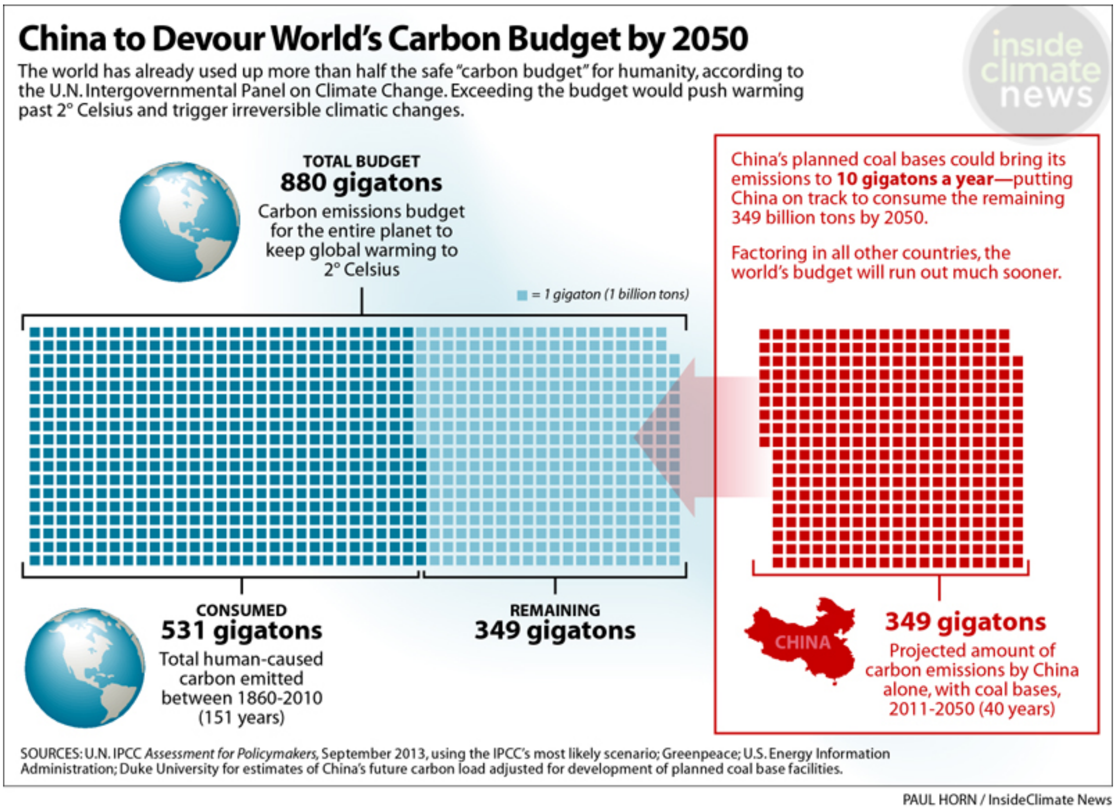
[33] Chris Buckley, "China's plan to limit coal use could spur consumption for years," *New York Times*, 25 July 2014. As Xi Jinping and Barrack Obama concluded their "historic" accord in November 2014 to cut both country's CO2 emissions and Xi promised reduce China's reliance on coal for power generation and boost renewables, the news that China's coal consumption actually fell by 2.5 percent in 2014, the first decline in a century, gave cause for optimism. Combined with the fact that China continues to lead the world in annual additions of wind and solar power, many hoped that China's coal consumption was finally peaking. But as Andrew Revkin points out, while China's coal production and imports declined in 2014, half of China's coal is used outside the power sector, in heavy industry, which use has fallen as the overall economy has slowed in recent years. Coal consumption in the *power sector* continues its relentless climb: in 2014 China newly-added coal power capacity exceeded new solar energy by 17 times, new wind energy by 4 times, even new hydro power by more than 3 times. In just the this one year, China added more new coal-fired power plants than Britain's entire fleet. These new plants will be pumping out GHG for many decades to come and in fact, most of China's coal-fired power plants are less than 15 years old so could they could still be running half a century from now. In short, for all the promises, coal is still king in China. Moreover, the economic slowdown is also likely to be shortlived as the government is furiously pumping money into the economy to revive growth. Andrew Revikin, "A look behind the headlines on China's coal trends," Dot Earth, *New York Times*, 18 February 2015: 6:00 PM at http://dotearth.blogs.nytimes.com/2015/02/18/a-look-behind-the-headlines-on-chinas-coal-trends/?_r=0.

[34] William J. Kelly, "China's plan to clean up air in cities will doom the climate, scientists say," *InsideClimate News*, 13 February 2014 at http://insideclimatenews.org/news/20140213/chinas-plan-clean-air-cities-will-doom-climate-scientists-say.

[35] Reuters, "China's coal expansion may spark water crisis, warns Greenpeace," *Guardian*, 15 August 2012. See also the accompanying documentary photos by Lu Guang: "China's mega coal power bases exacerbate water crisis -- in pictures," *Guardian*, August 21, 2012 at http://www.theguardian.com/environment/gallery/2012/aug/21/china-mega-coal-water-crisis-in-pictures.

[36] See Sophie Beach, "China's fracking boom and the fate of the planet" in *China Digital Times* 19 September 2014 at http://chinadigitaltimes.net/2014/09/chinas-fracking-boom-fate-planet/.

The UN Intergovernmental Panel on Climate Change calculates that if we're to keep global warming below 2 degrees Celsius, humanity cannot add more than 880 gigatons of CO_2 emissions to the atmosphere before 2050. Collectively, we've already used up more than half of that "carbon budget" (see chart below) leaving us a remaining budget of just 349 billion gigatons. If China produces just 10 billion tons of CO_2 per year, its current rate, with no growth whatsoever, it will still consume the entire carbon budget for the whole of humanity by itself by 2050. Scientists calculate that if China's planned coal bases come on stream the country's CO_2 emissions will soar, putting it on track to consume the entire carbon budget for the whole of humanity years by itself by 2050.



Source: William J. Kelly, "China's plan to clean up air in cities will doom the climate, scientists say," Inside Climate News, February 13, 2014.

C. Undrinkable water, poisoned soils, toxic food

If the air is bad, the water is far worse. In a few decades of breakneck industrialization, the Chinese have managed to severely and irreversibly pollute most of the nation's fresh water supplies with dire implications for public health. China's fresh water sources are contaminated by pesticides, industrial chemicals, heavy metals and myriad other toxics. China's largest rivers resemble vast open cesspools and for much of their length the banks are strewn with every imaginable kind of trash, numberless outlet pipes spewing multiple toxics, dead fish, dead pigs, pig swill, etc. Gushing pollutants turn long stretches of rivers bright red or purple or milky white or inky black. Sewage is routinely dumped mostly untreated in the nation's rivers, the same rivers many cities take their drinking water from, imperiling the health of hundreds of millions. The government has built wastewater treatment facilities all over the country but most remain unused.[37] China's rivers suffer huge spills of all kinds of toxic chemicals – benzene, xanthogenate, analine, etc. every year. In north China, the Yellow River "is a catastrophe" and the 300 odd rivers that drain the North China Plain "are open sewers if they are not completely dry" in the words of Ma Jun, China's leading authority on the country's water crisis.[38] According to a government report, the Yangtze River, the world's third longest, is seriously and irreversibly polluted. Long stretches are said to be in "critical condition," in places, too dangerous even to touch. Aquatic life has all but collapsed. Pollution and shipping wiped out China's legendary Yangtze Baiji dolphin while even common carp "are gasping for survival."[39] The five-hundred mile long reservoir filling up behind the huge Three Gorges dam on the Yangtze qualifies as the world's biggest cesspool. In some areas groundwater is being irreversibly polluted as textile dyeing mills and other factories, looking to avoid fines for dumping their effluents into rivers, instead drill and pump them into the earth. Some "use high-pressure pumps to discharge huge volumes of their wastewater directly underground." According to one scientist: "deliberate, malicious waste discharge by factories has already become endemic."[40] The China Geological Survey reported in 2013 that 90 percent of the country's groundwater is polluted, 60 percent of it is "severely" polluted. A survey of 11 cities across China in 2012 indicated that 64 percent of water sources were severely polluted and 33 percent moderately polluted. Only 3 percent of sources could be graded as clean.[41] It's difficult to overstate the dire implications of these practices: in China, groundwater is not only tapped for drinking water throughout rural China as well as in many cities, but over much of the country, especially the parched northern plains, this is the main source of water for farming.

Mass production of "cancer villages"

China's rivers have received many major toxic industrial chemical spills over the years. In September 2004, Jim Yardley of the *New York Times* reported on the situation in the Huai River basin, upstream from Shanghai, after a huge chemical spill created an 82 mile-long band of water that killed nearly every living thing and was too polluted even to touch. And the Huai, Yardley pointed out, was supposed to have been a government "success story."[42] In April 2014, a major leak of benzene poisoned the drinking water for millions in Gansu province.

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[37] Investigators have found that only a third of China's wastewater treatment plants are operating. Cui Zheng, "Seas of sewage," *CaixinOnline*, 12 October 2012 at http://english.caixin.com/2012-10-12/100446374.html

[38] Ma Jun, *China's Water Crisis,* Norwalk 2004, p. vii.

[39] Sun Xiaohua, "Pollution takes heavy toll on Yangtze," *China Daily*, 16 April 2007. Shai, Oster, "It may be too late for China to save the Yangtze goddess," *Wall Street Journal*, 6 December 2006.

[40] Xu Nan, "Poisoned groundwater sparks media storm in China," *China Dialogue*, February 2, 2013 at https://www.chinadialogue.net/blog/5749-Poisoned-groundwater-sparks-media-storm-in-China/en.

[41] Cecilia Torajada and Asit K. Biswas, "The problem of water management," *China Daily*, March 5, 2013. Gong Jing and Liu Hongqiao, "Half of China's urban drinking water fails to meet standards," *China Dialogue*, June 6, 2013 at https://www.chinadialogue.net/article/show/single/en/6074-Half-of-China-s-urban-drinking-water-fails-to-meet-standards.

[42] Ten years previously, a pollution tide had killed fish and sickened thousands of people. By 2001 the government claimed to have shut down polluters and declared the cleanup a success. But the Huai is now a symbol of the failure of environmental regulation in China. After spending more than $8 billion over a decade to clean up the Huai basin, the State Environmental Protection Administration concluded in 2004 that "some areas were more polluted than before." Jim Yardley, "Rivers run black, and Chinese die of cancer," *New York Times*, 12 September 2004. An Baijie, "Polluted river flows with carcinogens," *China Daily*, 8 August 2013 (on pollution of the Huaihe in Anhui Province by manganese, nitrates, and other carcinogens from local factories).

Beginning in the 1980s and 90s, the government promoted the development of market-oriented “township and village industries” (TVEs) to promote growth and employment. These industries, the darlings of the World Bank and western market-enthusiast academics, became notorious polluters. Foreign-invested Special Economic Zone industries are also major polluters.[43] In the 1990s and 2000s in response to growing anti-pollution protests in the cities, the government pushed dirty industries out the cities and into the countryside and rural towns. This brilliant move resulted in horrific contamination of whole rural regions and the mass production of “cancer villages” where extraordinary numbers of inhabitants are dying from intestinal, liver and other cancers caused by ingesting toxic water and food. NGOs count at least 459 villages spread across every province except far-western Qinghai and Tibet. In one village, 80 percent of the population is said to have died from pollution-induced cancers since 1991.[44] There are villages where almost every child is lead-poisoned.[45] Dumping of toxic chemicals and heavy metals extends even to remote corners of China. In neo-tropical Yunnan province, investigators have found “rampant chromium dumping” polluting rice paddies and drinking water.

The damage done

The problem with water pollution, unlike air pollution, is that it doesn’t disappear once the dumping stops. Heavy metals and other contaminants don’t easily break down or wash away. They can be very long-lived and can’t really be “cleaned up.”[46] Once ground water is polluted, there’s just no possible remediation. This means that extensive areas of China’s farmland, especially in the north, are effectively doomed.[47] This is taking a huge toll on the health of Chinese as well as non-human life forms and poses a mortal threat to entire society. Elizabeth Economy, author of *The Rivers Run Black* (2007), writes that “Less well documented [than air pollution] but potentially even more devastating is the health impact of China’s polluted water. Today, fully 190 million Chinese are sick from drinking contaminated water. All along China’s major rivers, villages report skyrocketing rates of diarrheal diseases, cancer, tumors, leukemia, and stunted growth.” [48]

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[43] Dr. Linda Greer (NRDC), “Top clothing brands linked to water pollution scandal in China,” *China Dialogue*, 9 October 2012 at https://www.chinadialogue.net/blog/5203-Top-clothing-brands-linked-to-water-pollution-scandal-in-China/en. (Armani, Calvin Klein, Marks and Spencer, Zara and others.)

[44] Xue Haitao and Liku Hongqiao, “Sip of death plagues cancerous river villages,” *CaixinOnline,* 9 October 2013 at http://english.caixin.com/2013-10-09/100589447.html. Yu Dawei et al., “The poisoning of the Nanpan river basin,” *CaixinOnline*, 1 September 2011 at http://english.caixin.com/2011-09-01/100297332.html. Sophie Beach “Shangba, China’s village of death,” posted 3 December 2007 on www.sprol.com/?p=371. Mary Ann Toy, “Waiting for death in fetid cancer villages,” *Sidney Morning Herald*, 26 May 2007. Jim Yardley, “Rivers run black, and Chinese die of cancer,” *New York Times* 12 September 2004. Staff, “South China river polluted by thallium, cadmium,” *China Daily*, 6 July 2013. Elizabeth Economy, *The River Runs Black.*

[45] Michael Wines, “Smelter in China poisons more than 1,300 children” *New York Times*, 21 August 2009. Staff, “Anhui battery factory poisons 200 children,” *Caixin* slide show, 6 January 2011 at http://english.caixin.com/2011-01-06/100214424.html.

[46] Luna Lin, “China’s water pollution will be more difficult to fix than its dirty air,” *China Dialogue*, 17 February 2014 at https://www.chinadialogue.net/blog/6726-China-s-water-pollution-will-be-more-difficult-to-fix-than-its-dirty-air-/en. Zhang Chun, “China ‘lacks experience’ to clean up its polluted soil,” *China Dialogue*, 14 April 2014 at https://www.chinadialogue.net/article/show/single/en/6897-China-lacks-experience-to-clean-up-its-polluted-soil.

[47] Matt Currell, “Losing lifeblood in north China,” *China Dialogue*, September 17, 2010 at https://www.chinadialogue.net/article/show/single/en/3823-Losing-lifeblood-in-north-China.

[48] Economy, “The great leap backwards,” *Foreign Affairs,* September-October 2007.

A journalist takes samples from a polluted river in China, *Der Spiegel* 17 Oct.2012.
Photo: Reuters

The bad earth and toxic foods

China's farmlands are extensively polluted with synthetic fertilizers, pesticides, heavy metals, sewage sludge and innumerable industrial toxics. Much of this comes from polluted irrigation water. In places, even industrial waste water has been used to irrigate farms when local wells have dried up or are themselves too polluted to use. In December 2013, the Ministry of Land and Resources reported that 3 million hectares (8 million acres – roughly the area of Belgium) of China's farmland is too polluted to grow crops on and researchers said that "as much as 70 percent" of China's farmland could be contaminated to some degree.[49] In April 2014, the government reported that almost 20 percent of the country's arable land, 10 percent of its woodlands, and 10 percent of its grassland soils were seriously polluted with heavy metals: cadmium, mercury, arsenic, lead, chromium, zinc, nickel plus inorganic compounds including DDT. The survey, carried out between 2006 and 2010 but suppressed for four years as a state secret out of fear of public outrage, summed up the nation's farmland situation as "grim"(*yanjun*).[50] Shocking as this is for a nation that must try to feed 20 percent of the world's population on 7 percent of the world's arable, environmentalists suspect the published figures understate the true extent of soil contamination.[51] In November 2014, the government conceded that 40 percent of the nation's farmland is degraded from acidification, pollution and erosion, and the government "is growing increasingly concerned about its food supply after years of rapid industrialization resulted in widespread pollution of waterways and farmland."[52]

[49] Reuters in Beijing, "China says more than 3m hectares of land too polluted to farm," *South China Morning Press*, 30 December 2013.
[50] Ministry of Environmental Protection, Huanjing baohu bu he guotu ziyuan bu fabu quanguo turang wuran zhuangkuang diaocha gongbao (Environmental Protection Ministry and Land and Natural Resources Ministry release countrywide soil contamination condition survey bulletin), 17 April 2014 at http://www.mep.gov.cn/gkml/hbb/qt/201404/t20140417_270670.htm.
[51] See Sam Geal and Elizabeth Hilton, "Culture of secrecy behind China's pollution crisis," and Angel Hsu and Andrew Moffat, " China's soil pollution crisis still buried in mystery," both in in *Pollution and Health in China: Confronting the Human Crisis*, special issue of *China Dialogue*, 9 September 2014 at https://s3.amazonaws.com/cd.live/uploads/content/file_en/7289/chinadialogue_health_journal.pdf.
[52] Xinhua, "More than 40% of China's arable land degraded," *China Daily*, 5 November 2014.

In May 2013, the Food and Drug Administration of Guangzhou, the capital of Guangdong Province, reported that 40 percent of the rice tested at restaurants that spring was contaminated with cadmium, a highly toxic heavy metal than can cause bone disease, cancer and other illnesses. Since extensive national testing has not yet been done for this or other contaminants, there is concern that such pollution is widespread. Fish (and fishermen) have also been found to have high levels of cadmium, mercury, and lead.[53]

To add further insult to consumers, deliberate food adulteration, contamination and fakery is rife in China. In 2008 public anger erupted after the government reported that tens of thousands of children were at risk of kidney stones and other organ damage from milk powder mixed with melamine, a chemical used to deceive protein tests. At least six infants died from illnesses linked to the tainted powder, which sickened more than 300,000 children. Despite repeated government crackdowns, food contamination is severe and growing in China. As domestic food grows increasingly unsafe, alarmed middle-class Chinese strip supermarkets of imported food and Chinese tourists clear out the shelves of baby formula from New Zealand to the Holland to pack home in their suitcases. Public alarm is also driving up food imports, which in turn is driving up world food prices.[54] For the first time in its history, China now imports more grain than it produces. This is bad news not only for China's basic food security but also for natural resources around the world as China's demand for soybeans, corn, wheat and other grains is leveling forests from Africa to the Amazon.

What's going on here?

Why is it that the same government that has lifted the living standards of more millions of people faster than any other nation in history, that has built the world's largest high-speed rail network, the largest airports, longest bridges, skyscrapers by the hundreds, whole cities practically overnight, can't guarantee safe drinking water or food or medicines or breathable air to its citizens. Why can't it enforce its own environmental regulations, its own building codes? Why can't stop its own local governments from squandering money building unneeded housing, airports, and rail lines? Why is it that the same ruthless police state that so proficiently crushes dissent and censors the internet can't stop producers, even state-owned companies, from making lead paint coated toys, poisoned milk, baby formula, toxic meat and dumplings, and can't suppress corruption in its own officials? The answer is to all these questions is to be found in the nature, contradictions, and tendencies of China's hybrid bureaucratic collectivist-capitalist economic system.

[53] Liu Hongqiao, "The polluted legacy of China's largest rice-growing province," *China Dialogue*, 30 May 2014 at https://www.chinadialogue.net/article/show/single/en/7008-The-polluted-legacy-of-China-s-largest-rice-growing-province. Zheng Yesheng and Qian Yihong, Shendu Youhuan — Dangdai Zhongguo de Kechixu Fazahan Wenti (*Grave Concerns: Problems of Sustainable Development for China*) (Beijing: China Publishing House 1998), pp. 8-10.

[54] John Dearing, "China's polluted soil and water will drive up world food prices," *China Dialogue*, 3 March 2015 at https://www.chinadialogue.net/article/show/single/en/7768-China-s-polluted-soil-and-water-will-drive-up-world-food-prices.

II. A POLITICAL ECONOMY

China's rulers preside over the largest and most dynamic economy in the world, a powerhouse of international trade whose state-owned conglomerates count among the largest companies in the world. They profit immensely from their state-owned enterprises (SOEs) market returns. But they're not capitalists, at least not with respect to the state-owned economy. Communist Party members don't own individual SOEs or shares in state companies like private investors. They collectively own the state which owns most of the economy. They're bureaucratic collectivists who run a largely state-planned economy that also produces extensively for market. But producing for the market is not the same thing as capitalism.[55]

Three of the top ten 2014 Fortune Global 500 corporations are Chinese. But they're not owned by Chinese capitalists. They're owned by the Chinese government. James McGregor notes that "Of the sixty-nine companies from mainland China in the Fortune Global 500 in 2012, only seven were not SOEs [and all of these seven] companies have received significant government assistance and most count government entities among their shareholders." Thirty-five years after the introduction of market reforms, China's government still owns and controls the commanding heights of the economy: banking, large-scale mining and manufacturing, heavy industry, metallurgy, shipping, energy generation, petroleum and petrochemicals, heavy construction and equipment, atomic energy, aerospace, telecommunications, vehicles (often in partnership with western companies), aircraft manufacture, airlines, railways, biotechnology, military production and more. Plus all the land and natural resources: there is no private property in China. In key industries SOEs own and control between 75 and 100 percent of assets including 96.2% of telecom, 91.6% of power generation, 76.6% of petroleum and petrochemicals, 76.2 % of airlines, 74% of autos, and so on. China's banks are 100% state-owned (though there are some private equity firms).[56] In the words of James McGregor, "SOEs monopolize or dominate all significant sectors of the economy and control the entire financial system. Party leaders deploy the SOEs to build and bolster the economy – and undergird the Party's monopoly political control. The private sector provides a lubricant for growth and the opportunity for people to become rich as long as they support the Party."[57] SOEs together with local government-owned urban collective and township and village industries currently account for 50 percent of China's current non-farm GDP. Foreign-invested joint ventures account for about 30 percent of non-farm GDP (though Chinese partners of larger joint ventures, like auto assembly, are mostly SOEs). China's indigenous private sector accounts for about 20 percent of non-farm GDP.[58]

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[55] For example, Antebellum southern planters produced cotton, tobacco, sugar and indigo entirely for market, indeed for the world market. But they did so with slave labor. This hybrid capitalist-slave mode of production was obviously radically different than production for market based on free labor in the North and it had broad implications for productivity, economic development, and more. It gave their economy an entirely different character, dynamic and trajectory, and it had profound economic, social, political, and psychological consequences, many of which we still deal with today.

[56] James McGregor, *No Ancient Wisdom, No Followers: the Challenges of Chinese Authoritarian Capitalism* (Westport: Prospecta Press: 2012), p. 4-5, 16-19 (quote from p. 57) and the sources cited therein, including the head of the State-owned Assets Supervision and Administration Commission (SASAC).

[57] *No Ancient Wisdom*, p. 2

[58] Andrew Szamosszegi and Cole Kyle, "An Analysis of State-owned Enterprises and State Capitalism in China," October 26, 2011. US-China Economic and Security Review Commission (USCC), pp. 21-22 at http://origin.www.uscc.gov/sites/default/files/Research/10_26_11_CapitalTradeSOEStudy.pdf. On state control of the banking sector, see Carl E. Walter and Fraser J.T. Howie, *Red Capitalism: The Fragile*

SOEs resemble capitalist corporations but they're not driven by the same motor of market competition, they don't face the same incentives and penalties as capitalist firms, at least not to the same extent, and they're not run like capitalist companies.[59] These days China's state sector has all the superficial trappings of a market economy: corporations, CEOs, IPOs, stock markets, and so on: The Ministry of Petroleum is now called China National Petroleum Corporation. Baoshan Iron and Steel now calls itself Baosteel Group Corp. and so on. But SOEs aren't "corporations." Dozens of Chinese SOEs have held IPOs listings on the New York Stock Exchange and China's own toy stock markets in Shenzhen and Shanghai. But the government won't allow its companies to be bought and sold. It will only permit a minority of shares, not more than 25 percent, and only non-voting shares at that, to be traded on the market. As one expert put it "the Chinese government is the only shareholder that counts."[60] Lots of SOEs produce some or most of their output for market. State Grid produces power for, besides China (where it has a monopoly), Singapore, Australia and is developing facilities in the Phillippines and Portugal. But State Grid does not answer to shareholders or boards. China's SOEs are not run by boards of directors and elected CEOs. They don't have boards of directors. And their CEOs and senior management are all appointed by the Communist Party. All Chinese state "corporations" have Communist Party secretaries who without exception outrank the enterprise CEOs.[61]

To be sure, China has a vast capitalist market economy side-by-side with the state sector. Thousands of real corporations, foreign corporations, operate in China today: Apple, Toyota, Audi, GM, Samsung, Procter & Gamble, Walmart, even the Avon lady. And China has plenty of home-grown entrepreneurs and privately-owned businesses. China is said to have more than a million U.S. dollar-millionaires and at least 89 billionaires. The private sector includes sizeable companies like Baidu (the internet search giant that dominates the China market since Google left), Tencent (instant messaging), Jack Ma's Alibaba, real estate developers like Dalian Wanda Group and China Vanka, food processors like Wahaha Corp., insurance companies, and others. But these are not the core of the economy. China's biggest private company by valuation, Alibaba, doesn't produce anything at all; like Ebay it just connects sellers with buyers. Most of China's private businesses are small, on average less than half the size of SOEs and the vast majority are even smaller: thousands of small coal mines, thousands of local construction companies, some small steel mills, textile and garment

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Foundations of China's Extraordinary Rise (Singapore: Wiley & Sons, 2012), pp. 31-33 and passim. Also: Henry Sanderson and Michael Forsythe, *China's Superbank* (Singapore: Wiley & Sons, 2013). Barry Naughton, *The Chinese Economy: Transitions and Growth* (Cambridge: MIT 2007), pp. 190, 299-304, 325.

[59] Thus with respect to the banking sector, Szamosszegi and Cole write that: "The state banking sector dominates the landscape in China and tends to favor SOEs at the expense of private sector firms. Second, SOEs are in general an important instrument of government policy. The government uses SOEs to facilitate structural change in the Chinese economy, to acquire technology from foreign firms, and to secure raw material sources from beyond China's borders. For example, in 2009, the government turned to its SOEs and state-owned banks to provide stimulus to the domestic economy. Third, the CCP and SASAC maintain important influence over the executives of SOEs. These executives face two sets of incentives. On the one hand, the entities they control are supposed to be profitable, and SOE executives are now rewarded based on financial performance. On the other hand, the appointments of top executives to SOE management and their future career paths upon leaving the SOE are determined by the Central Organization Department of the CCP. Thus, SOE executives have an incentive to follow the government's policy guidance. Recent examples, as well as financial disclosure documents, indicate that if maximizing shareholder value conflicts with state goals, SOEs and their wholly-owned subsidiaries are likely to pursue the goals of the state." "An Analysis of State-owned Enterprises" op.cit. p. 3.

[60] McGregor, *No Ancient Wisdom*, p. 59.

[61] Walter and Howie, *Red Capitalism*, p. 24, 187.

industries, shoemakers, retail shops and supermarkets, restaurants, self-employed truckers, family businesses, and the like.

"Get rich and you'll get audited"

The Communist Party keeps its domestic capitalists on a short leash. Successful entrepreneurs soon find they need a state "partner," or the government sets up its own competitors to suppress them, or they suffer forced buyouts. Those who cross the Party disappear and their property is seized, and worse.[62] Those whose names appear on Forbes list of the world's wealthiest citizens or the Hong Kong Hunrun Rich List sometimes vanish without a trace. Chinese call these the "pig-killing lists." Middle-class Chinese speculate on apartments and suburban villas but the land they sit on is state-owned. Indeed, even title to the apartments and villas they've bought is never really secure because these can easily be seized by the state on a whim, with no recourse. It's been estimated that in the last three decades more than 60 million Chinese farmers and urban residents have had been summarily evicted from their homes and farms to make way for government development projects of all sorts across the country. More than a million and a half farmers and townsfolk were evicted to make way for the Three Gorges dam. Several million residents of Beijing were evicted to shabby satellite towns while their ancient Beijing homes, some dating back to the Ming Dynasty, were leveled to make way for shopping malls, apartment towers, and Olympic sports stadiums.[63] In such a system, arbitrary political power and generalized insecurity condition every aspect of life, even within the ruling Party itself. *Especially* within the ruling Party.

A. Beijing's Game of Thrones

China's ruling class is the *nomenklatura*, the upper ranks of the 86 million-member Chinese Communist Party. Since the victory of the revolution in 1949, China has been run by the party-army-bureaucratic aristocracy, the leaders of which reside behind the walls of the Zhongnanhai complex adjacent to the Forbidden City.[64] In the 1950s, they nationalized the economy, divided up government administrative and economic management posts amongst themselves and centralized all surplus extraction. Today this state-owned economy is run by their children and will soon be run by their grandchildren. Since Mao's death in 1976, the inner circle of the ruling "red families" have been headed up by the so-called "Eight Immortals": Deng Xiaoping, Chen Yun (the CPC's leading economic planner), Wang Zhen, Li Xiannian (PRC President) Peng Zhen (NPC Congress Chair), Song Renqiong (party personnel chief), Yang Shangkun (PRC President), Bo Yibo (Vice Premier and last of the eight to die at 98 in 2007).[65] As the elders retired and died off they entrusted the reins of power to their children, the "princeling" (*taizi dang*) sons and daughters of the first generation of communist rulers. Since the bad old days when Mao and his Gang of Four dispatched their rivals to rot in dungeons, or shot Lin Biao's plane out of the sky to prevent his escape to Moscow, the Communist Party has made every effort to present a public façade of leadership

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[62] Ben Blanchard, "Chinese billionaire mining tycoon Liu Han is executed over his links to a 'mafia-style' gang," *Sydney Morning Herald*, 9 February 2015. Most accounts say that his real crime was his link to the Zhou Yongkang clique.

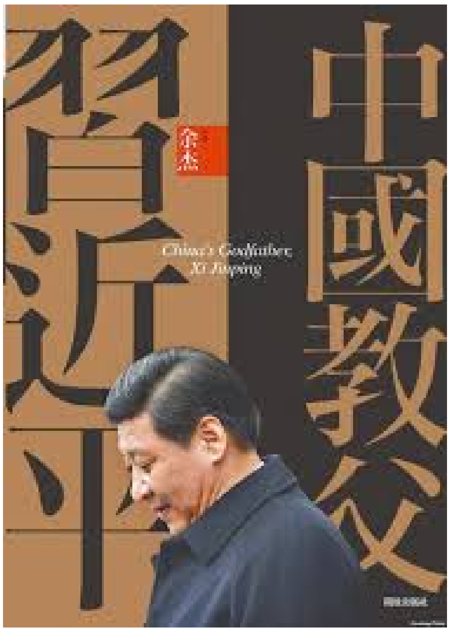
[63] Becker, *City of Heavenly Tranquility*, pp. 287-289.

[64] Sydney University's Kerry Brown says the number of "high-level cadres" (*gaoji ganbu*) who run the ministries, the state conglomerates, and the administration, all concentrated in Beijing, total no more than 2,562, which means, he says, that China is effectively "run by group of people that is smaller than most villages in Europe." *The New Emperors: Power and the Princelings in China*, New York 2014, pp. 20-21.

[65] Richard McGregor, *Th*, New York 2010. Carl E. Walter and Fraser J.T. Howie, *Red Capitalism,* Singapore 2012, pp. 22-25 and passim.

unity and discipline and portray its internal workings as "regularized" with "collective leadership," "ten-year rotations" of "presidents" and "prime ministers," "mandatory retirement of senior officials at 65" and so on. Nothing could be further from the truth.

Today, as in Mao's day, CP internal political machinations resemble nothing so much as The Godfather or Game of Thrones. And how could it be otherwise? In the absence of the rule of law, without elections to choose government representatives, without inner-party democracy, without constitutional procedures to regularize succession to office, without an independent judiciary, justice department, attorneys general and police to systematically prosecute and punish corrupt politicians, in such a system no one owns their office, position or job on the basis of merit, professional qualification, fixed-year terms, or enforceable contracts. Every cadre's personal and political security depends, above all, on the strength of his/her *guanxi*: his connections and relationships with networks of allies, their patrons above, their supporters below and especially to families, clans, and factions. From the days of Mao's purges of "capitalist roaders" Lin Biao, Liu Shaoqi and Deng Xiaoping, to Deng Xiaoping's own purge of the Maoist Gang of Four, to Jiang Zemin's purge of "counterrevolutionaries" Zhao Ziyang, Bao Tong et al. in the wake of the 1989 Tienanmen uprising, to current President Xi Jinping's show trials of "corrupt" rival Bo Xilai (son of Bo Yibo) and his persecution of powerful opponents in the Oil Faction and secret police led by Zhou Yongkang, the Chinese Communist Party's internal political dramas differ little from the treacherous, fratricidal power struggles of the Coreleones, Barzinis and Straccis of The Godfather or the bloody feudal wars of the Starks, Tullys and Boltons for supremacy in Westeros. As in the Game of Thrones, China's Communists are embroiled in non-stop faction building, never ending intrigue and infighting, and treacherous factional struggles while the paramount leader *du jour's* claim to the Red throne in Zhongnanhai is never completely secure.[66]



Cover of Yu Jie's as-yet unpublished book *China's Godfather Xi Jinping*

[66] Eg. Shi Jiangtao, "Struggle for supremacy by party factions now on display," *South China Morning Post*, 13 October 2012. Matthew Robertson, "China's 'hatchet man' set to be purged in party struggle," *Epoch Times,* 30 May-3 June 2014 (reporting a rumored threat to Xi Jinping's life by the Bo Xilai faction). Teddy Ng, "Rising star Li Yuanchao forges ties with all political factions in China, *South China Morning Post,*1 October 2012.

Godfather Xi Jinping

President Xi Jinping came into office in 2012 on a campaign vowing to "swat tigers and flies alike." Xi had been brought in to replace the disgraced Shanghai Mayor Chen Liangyu on the strength of his anti-corruption campaigns in Zhejian province where he once told an anti-graft conference: "Rein in your spouses, children, relatives and friends and staff, and vow not to use power for personal gain."[67] But Xi is just as corrupt as all the rest, and just as thuggish.

Xi once remarked that as a young man he liked to watch the *The Godfather*. Yu Jie, an exiled author of numerous critical books on China, titled his latest book: *Godfather of China Xi Jinping* (still awaiting publication as of March 2015). Yu told the New York Times that the film was Xi's political study guide: "The Communist Party is China's biggest Mafia, and the party boss Xi Jinping is the Godfather of China." As if to confirm Yu's thesis, when he tried to publish the book in Hong Kong, one publisher was arrested in Shenzhen and disappeared. A second prospective publisher received a threatening phone call from Beijing telling him that the book "absolutely cannot be published" and if he publishes it, "your personal safety and the safety of your family cannot be guaranteed" so he immediately dropped the project. Life in the Communist Party is not so different from life in the Mafia: it's a constant, treacherous, and highly dangerous non-stop factional struggle between crime family-based groupings in struggle with one another over top offices and treasure. The key to safety is building unshakable vertical and horizontal networks of support and protection -- of *guanxi.* And the key to solidifying those networks is sharing the loot from corruption. As political scientist Minxin Pei put it: "If your patrons do not protect you, you're toast. . . Corruption is the glue that keeps the party stuck together."[68]

B. Grabbing the brass ring: gangster capitalism and the necessity of corruption

China's economy mirrors its politics. China's communist party-state has grown immensely wealthy over the past three decades from rivers of income flowing in from huge state monopolies like Sinopec (China Petroleum), State Grid, Bank of China, China Telecom, from taxing export foreign exchange earnings, and more. But the question is, how is this loot shared out amongst the ruling class of China, the "gang" of eighty-six million Communist Party members? In capitalist economies, this is entirely formalized and regularized. One's wealth is based on property, cash in the bank, stock ownership and such – all secured by the rule of law, enforceable contracts, an impersonal state, independent judiciary, police, etc. But China has none of this. Cadres don't privately own SOEs, they don't own shares in SOEs.

Yet we know from multiple sources including trials of corrupt officials, revelations about secret offshore bank accounts, records of foreign property purchases, and especially from recent headline exposés in the The New York Times and Bloomberg News on the wealth of China's leading "princelings" including former current heads of state, that China's Communist Party cadres have gotten gloriously rich out of market reform.[69] The New York Times calculated

[67] Quoted in *Bloomberg News*, "Xi Jinping millionaire relations reveal fortunes of elite," 29 June 2012.
[68] Quoted in David Barboza, "The corruptibles," *New York Times*, 3 September 2009. See also again, Robertson, "China's 'Hatchet Man' set to be purged. . . " in op cit.
[69] Outgoing Premier Wen Jiabao, incoming Premier Xi Jinping, and other wealthy princelings were profiled in *Bloomberg News* and the *New York Times*, in 2012 and 2013 – which got both papers shut

that former Premier Wen Jiabao was worth at least $2.7 billion when he retired in 2012, all secreted under the names of close relatives.[70] As Xi Jinping climbed the Party ranks, his extended family got rich in minerals, real estate and mobile-phone equipment. Today his family is worth at least $376 million, again, with virtually all of it listed in the names of his close relatives rather than his own.

Markets and the mother of all moral hazards

When Deng Xiaoping rejected Maoism and told the Chinese that now it was OK, even "glorious to get rich," he faced an immediate problem: to get marketization rolling, he urged the cadres to promote private businesses, joint-ventures with foreign investors, to "jump into the sea of commerce" as he said in his famous "southern tour" of Shenzhen 1992*.* Deng's market reforms thus presented the personally penniless but functionally all-powerful CCP cadres with mother of all moral hazards. China's re-introduction of capitalism presented the cadres with a once-in-an-epoch opportunity to grab the brass ring, to get rich, *really* rich, and *fast.* The party-state owned all land, resources, industries, controlled the banks and pension funds, foreign trade and currency exchange, the courts, police, everything. The problem was that the only ways to profit from this were all illegal: bribery, smuggling, influence peddling, embezzling money from state industries, profiting from *guandao* (reselling state-owned raw materials and commodities on the free market at huge markups), asset stripping, currency manipulation, money laundering and so on. Risky, but how could they resist? Far from resisting, they led the way in what exiled economist He Qinglian called "the marketization of power."[71] Besides, since there was no independent judicial system, it was left to the party officials to police themselves. The very people who stood to gain the most from the coming market boom were supposed to refrain from self-dealing. Even so, the breadth and brazenness of corruption grew slowly at first. Looking back to the 1980s, Bao Tong, a senior party official arrested and imprisoned as a "counterrevolutionary" during the 1989 Tienanmen crackdown told Bloomberg News in December 2013: "A bottle of Moutai, two cartons of Chungwa cigarettes – corruption was no more than that at the beginning." "Now an enterprise worth 10 billion yuan can be purchased with 1 billion. This would have been appalling to people back then." [72]

"It doesn't matter who owns the money, it only matters who gets to use it."

Today, the buffet of benefits available to the upper ranks includes extravagant state-provided housing, posh offices, fleets of limousines, access to state-owned vacation villas, travel and plenty of pocket change to spend on fine French wines, Rolexes, LV handbags and the rest. At the top, princelings are often heads of giant conglomerates which themselves own dozens or even hundreds of individual SOEs. Presumably this gives them access to multiple income streams and ample opportunities to plunder the government's ever-growing treasure. Princeling Bo Xilai didn't send his son Guagua to Harrow and Oxford and Harvard, buy him

down in China and their reporters denied visa renewals in 2013. See "Heirs of Mao's comrades rise as new capitalist nobility" and links to related stories in *Bloomberg News*, 26 December 2012 at http://www.bloomberg.com/news/2012-12-26/immortals-beget-china-capitalism-from-citic-to-godfather-of-golf.html. Also again Richard McGregor, *The Party* and Kerry Brown, *The New Emperors.*

[70] David Barboza, "Billions in hidden riches for family of Chinese leader," *New York Times*, 25 October, 2012.

[71] *Zhongguode xianjing (China's Pitfalls*) (Hong Kong: Mingjing chubanshe, 1997)

[72] "Heirs of Mao's comrades rise as new capitalist nobility," op cit. p. 11.

Porches and Ferraris and fancy apartments in Oxford and Cambridge Mass. on his official salary. Even China's leaders complain that China's "governments at all levels" had turned the state's banks into "ATMs for officials and official businessmen."[73] As one SOE boss put it: "It doesn't matter who owns the money, it only matters who gets to use it."[74] As individuals, they loot according to their rank and positions and *guanxi.* And of course, who gets to use exactly what is shrouded in secrecy. Financial Times Beijing bureau chief Richard McGregor quotes a businessman jailed on corruption charges who said: "Every official has three lives. Their public life, their private life, and their secret life."[75]

In the boom years of the 1990s and 2000s in China's ruling class, taking their cue from New York banksters who were becoming their partners and backers, corruption flourished on a previously unimagined scale. They siphoned huge sums from state banks, SOEs, ministries. They looted pension funds and state charities. They've profited from illegal arms sales and smuggling. They made vast fortunes in real estate evicting millions of farmers and selling their lands to developers. They made more fortunes taking cuts from listing Chinese companies on the New York stock exchange. In all this the "princeling" children and grandchildren of the "Eight Immortals" have led the way. In the 1980s, Deng Xiaoping, Chen Yun, and the other aging revolutionary generation leaders entrusted their children to run the new market-oriented state conglomerates like CITIC, China Poly Group (arms, African oil, etc.). Deng's daughter Deng Rong and her brother Deng Zhifang were among the first to go into real estate in the 1990s. As Bloomberg reported in its investigative report on the 103 children and grandchildren of the Eight Immortals, "Families benefited from their control of state companies, amassing private wealth as they embraced the market economy. Forty-three of the 103 ran their own business or became executives in private firms ... The third generation – grandchildren of the Eight Immortals and their spouses, many of whom are in their 30s and 40s – have parlayed family connections and overseas education into jobs in the private sector." Others took over state sector conglomerates and SOEs. Twenty-six of the heirs of just these eight revolutionary leaders ran or held top positions in big SOEs: "Three children alone – General Wang's son, Wang Jun, Deng's son-in-law, He Ping; and Chen Yuan, the son of Mao's economic tsar – headed or still run state-owned companies with combined assets of about $1.6 trillion in 2011.[76] Deng's son-in-law Wu Jianchang, got himself appointed head of numerous metals companies and then became, conveniently, Minister of Metallurgy. Deng' grandson Zhuo Su got himself appointed head of a company that bought into an Australian iron-ore business. Wang Jun, the revolutionary general's son set up a huge conglomerate, Poly Group, with Deng Xiaoping's son-in-law He Ping, another general. Chen Yun installed his son Chen Yuan as head of the giant state-owned China Development Bank with assets of more than $1 trillion. His sister, Chen Xiaodan worked at Morgan Stanley in New York, set up her own private equity firm, and worked with her father's China Development Bank to support Chinese firms investing abroad in Europe and elsewhere. Wang Zhi, General Wang's third son, "borrowed" ¥300,000 yuan from his employer, the Ministry of Electronics, to set up his own company building personal computers, eventually

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[73] Ex-Premier Zhu Rongji, quoted in Richard McGregor, *The Party*, p. 45.
[74] Quoted in Walter and Howie, *Red Capitalism*, p. 23. . In October 2014, one high-level cadre in the energy ministry caught up in Xi Jinping's anti-corruption sweep, had stashed away 200 million yuan (HK$252 million) in banknotes in one of his apartments. The pile of banknotes weighed more than 2.3 tons.
[75] Quoted in Richard McGregor, *The Party*, pp. 140-41.
[76] "Heirs of Mao's comrades rise as new capitalist nobility," *Bloomberg News*, 26 December 2012 p. 3 at http://www.bloomberg.com/news/2012-12-26/immortals-beget-china-capitalism-from-citic-to-godfather-of-golf.html. Further citations below are from articles in this collection.

partnering with Bill Gates to develop a Chinese version of Windows software. As Yang Dali of the University of Chicago put it: "The entire country was in business – the, the military, the courts, the prosecutor's office, the police." "Insiders could get rich very quickly." And "when the top is corrupt, this is how it will be all the way down" said Dai Qing, China's leading environmental activist who herself grew up in the Zhongnanhai compound with the princelings after being adopted by a famous general. [77] Bloomberg reports that, when he was lying in a hospital bed in 1990, hard-line Maoist General Wang Zhen (1908-1993) told a visitor that he felt betrayed by his own children. Decades after he had risked his life fighting for an egalitarian utopia, his children were only interested in getting rich: "Turtle eggs," he said to the visiting well-wisher, using a slang term for bastards. "I don't recognize them as my sons."[78]

Getting the loot out of China

International banking connections have been also been key to the princeling's strategy of getting their loot out of China. Over the years, it has been estimated that princelings and other high cadres, cronies and capitalists have funneled between one and four *trillion* U.S. dollars in unreported assets out of the country since 2000. Credit Suisse, PricewaterhouseCoopers, and UBS -- Western banks with notorious experience in sheltering U.S. and other tax evaders, set up secret companies and accounts for at least 21,000 Chinese in Caribbean tax havens including for Wen Yunsong, Wen Jiabao's son. High cadres, their relatives and other rich guys fly suitcases of money to North America, Australia, Caribbean havens, and other friendly destinations.[79] In February 2014, it was reported that more than 45,000 (!) Chinese *millionaires* had queued up in Vancouver, British Columbia to get investor residence visas in return for five-year interest-free loans to the Canadian government. In the U.S. 80 percent of the government's EB-5 investor program visas are going to wealthy ex-mainland Chinese; in Australia it's 9 out of 10. At least 18 of the Eight Immortals' descendants own or run entities registered in the British Virgin Islands, Cayman Islands, Liberia and other secret offshore tax havens.[80] Bo Yibo's wife Gu Kailai, convicted in 2012 of murdering her British business partner controlled a web of businesses from Beijing to the Caribbean worth at least $126 million and stashed many of her assets with her sister in places like the British Virgin Islands, according to Bloomberg.[81] So it goes.

C. Implications, tendencies, consequences

This structural arrangement of bureaucratic/gangster capitalist power and property has given China's economy a radically different pattern and trajectory of economic development from normal capitalism anywhere in the West. We can specify at least the following broad systemic tendencies in this hybrid economic system:

[77] Yang Dali and Dai Qing were quoted in *Bloomberg News*, "Heirs" op cit. pp. 5,6 and 10.
[78] *Bloomberg News*, "Heirs," pp. 1,5.
[79] Chinese fly cash to North America, by the suitcase," *Wall Street Journal,* 2 January 2013. Shen Ming, "Chinese military officers secretly moving money offshore," *Epoch Times*, 28 June 2012. Benjamin Robertson, "US1.25 trillion moved out of mainland China illegally in 10 years, says report," *South China Morning Press*, 16 December 2014.
[80] James Ball and Guardian US Interactive Team, "China's princelings storing riches in Caribbean offshore haven," *Guardian,* 21 January 2014, reporting on the findings of a two-year reporting effort by the International Consortium of Investigative Journalists (ICIJ). *Bloomberg News*, "Heirs" p. 6.
[81] "China murder suspect's sisters ran $126 million empire," *Bloomberg News*, 13 April 2012.

1. Priority to the state-owned economy: Shocked and riveted by the collapse of communism in Eastern Europe and especially the communist debacle in the USSR, Deng Xiaoping and his successors have been determined to avoid such a fate by maintaining state control over the commanding heights of the economy, avoiding substantial privatization, and limiting the internal market, as we noted above. That's why the maximand of China's SOEs is not profit maximization. Their maximand is the security, wealth and power of the Chinese Communist Party and that's not the same thing. The Bank of China, China Development Bank, the Industrial & Commercial Bank of China and other huge state banks sit at the apex of China's economy and count among the Global Fortune 500 largest companies. But unlike Citibank or HSBC, their job isn't to make money. Their job is to lose money – or more precisely, to disburse it. It's often said that in the transition to capitalism China's market reformers "abandoned central planning." That's an exaggeration. They reduced the scope of indicative planning but they did not abandon planning the state sector; they monetized it. Instead of issuing physical output targets à la Stalin and Mao, they direct most of the state economy by writing checks: by ordering state banks to disburse funds to support the production goals of the state plans (though they still do also set physical targets for some items – kilometers of rails, kilometers of roads, tons of wheat and cotton etc., as noted above). In the 1990s the government leased out, sold off, or closed down thousands of small unprofitable SOEs producing consumer goods including wood and leather products, furniture, building materials, garments, food products and the like. Dispensing with these, the government concentrated on restructuring, modernizing, expanding and diversifying the state's SOEs.[82] The government also expanded the state sector by establishing entirely new industries: consumer appliances, solar and wind power, biotech, high-speed trains, passenger aircraft, IT, and others. But instead of assigning production targets for quantities of Geely cars or Suntech solar panels or China National Railways (CNR) high-speed trains, they allocate funds via state banks to fund support state-owned industries like CNR and to establish and support state-private joint ventures like Suntech and Geely. Since the 1990s, China's SOEs, and the entire state industrial sector, have grown enormously. Whereas in the 1970s, China's SOEs counted for almost nothing in the world economy, today, China's "national champions" Sinopec, China National Petroleum and State Grid Corporation rank among the ten largest companies by revenue in the 2014 Fortune 500.

Prioritizing the state sector means that the government often finds it rational subvert its own market reforms to protect state interests: So when the head of a major state-owned conglomerate was removed for embracing market economics too enthusiastically, a Beijing University expert on China's state-enterprises commented: "There's a system in place, not just one person. The party's appointee draws his position from patronage ... and the task is to engage with state leaders and safeguard government assets, not to maximize profits."[83] This is why the government enforces SOE monopolies regardless of efficiency, why it limits western investor ownership share in joint ventures, why it bars western firms from investing in key industries, why it directs its huge sovereign wealth fund mainly to invest in the resource extraction industries China needs to fuel its national economic development even though global resource prices and resource industry profits have both been falling since 2008.[84] This

[82] On SOE restructuring and growth of the planned economy, see Peter Nolan, *Transforming China: Globalization, Transition and Development*, London 2004, chapter 5.
[83] James T. Areddy and Laurie Burkitt, "Shake-up at China firm shows reach of graft crackdown," *Wall Street Journal*, 23 April 2014.
[84] So for example, with respect to China's investment in mines in Zambia, Professor Ching Kwan Lee quotes a Chinese mining executive who says "We don't need to maximize profit, but we need to make *some* profit. The state won't support us if we make losses year after year." Lee adds that "between profit optimization and profit maximization lies the space for achieving other types of return – political

is all in the collective interest of China's state-based ruling class.

Yet at the same time, individually, princelings and well-placed cadres are simultaneously conniving, like the gangsters they are, to privatize pieces of the state-owned economy, to sell them at huge discounts to themselves, their relatives and partners, usually via private investment banks whose real owners are concealed behind multiple layers of paper and shell companies. Cadres also funnel money out of SOE profits to buy businesses and properties in the West. SOE overseas companies open still other opportunities to privately pocket profits earned overseas before they're sent back to China. It can't be ruled out that such trends could eventually lead to a broad selloff of state assets à la Poland. But for the present, the party seems determined to protect the state-owned economy rather than let it collapse and be sold off and privatized.

2. Hypergrowth drivers: incentives without penalties: China's SOEs, as we noted, don't live or die on the basis of their performance in the market. Lots of SOEs are inefficient but because many are also monopolies, they can still be gold mines.[85] As one official observed, *"the overall economy has been so good that even pretty stupid SOEs could do well without much effort."*[86] Broke, indebted, inefficient or not, so long as their SOEs are in-plan, and especially if they've been designated "key" or "strategic" or "pillar" industries like coal or oil or autos or aerospace or biotech or high-speed rail or some other priority, SOE managers could assume that they would never be forced out of business regardless of their economic performance and generally speaking they have not been. In result, SOE managers have had the best of both worlds: they have every incentive to borrow and spend, especially on capital construction (including those palatial offices to run the operations), but they face little or no threat of discipline for excess or failure. Given the profit sharing arrangement between the Center and the SOEs, for SOE bosses, it is capitalism when the SOE is making money but socialism when it needs a government bailout. This is the main driver of "blind growth" across the economy and this can be expected to continue.

3. Hypergrowth drivers: job creation: In capitalist economies, neither individual companies nor governments are obliged to create jobs, though in extreme circumstances like the Great Depression, governments have set up jobs programs to keep the peace. But in China, in the old Maoist bureaucratic collectivist system, the government was the only employer, so it had to employ everyone because there was nowhere else to find work. In Mao's day, successive generations of workers were simply assigned to work units (*danwei*) with the result that China's industries and government offices were often abundantly overstaffed. But with the turn to the market, the government abolished guaranteed employment in the mid-1990s and SOEs laid off some 50 million superfluous workers in the 1990s to make their industries more efficient. By then however, many excessed workers could find jobs in the new parallel market economy while others were forced into retirement on subsistence pensions. The destruction of millions of state jobs with state benefits provoked widespread protests and unrest in the late 1990s and early 2000s. To contain this unrest, and also to keep up with China's relentless population growth, the government has been forced to spend heavily on wave after

influence and access to raw materials." "The spectre of global China," *New Left Review* 2/89, September-October 2014, p. 36.

[85] Thus James McGregor writes: "Despite their chronically imprudent lending habits, SOE banks are kept afloat – and reap huge profits to boot – through government-set interest rates. With a ceiling on the interest rates for deposits and a floor on lending rates, China's banks have enjoyed a comfortable spread of about three percentage points, which guarantees profits." *No Ancient Wisdom,* p. 65.

[86] Long Youngtu, China's chief negotiator at the WTO, quoted in James McGregor, *No Ancient Wisdom,* p. 5 (my italics).

wave of WPA-like make-work capital construction projects across the country since the 1990s, even if much of what got built was unneeded, as noted above. Given the special threat that extensive unemployment poses to a nominally workers state, this pattern of make-work overproduction and overdevelopment can be expected to continue.

4. Collective property weakens efforts to reduce pollution: Collective ownership means that even with its police-state dictatorship, the Center can't always enforce its will against lower level officials because those local, country, provincial, ministerial officials, SOE bosses and so on are more partners with Beijing in their joint ownership of the national economy than strictly subordinates. They all have their own *guanxi* networks to defend their turf and promote their own interests in contravention of central initiatives when it suits their purposes. This is why central efforts to restrain pollution tend to be subverted or defeated by local officials whose overriding concern is to keep the economic engines running regardless of the smog. China has comprehensive environmental legislation on the books. It has its own EPA equivalent, the State Environmental Protection Agency (SEPA). It has a State Food and Drug Administration (SFDA) and other regulatory agencies. But the evidence everywhere is that regulation is largely a failure.[87] Here and there SEPA has managed to enforce some cleanups and shutdowns of some conspicuous polluters, usually smaller operations. But more often than not, SEPA regulators are powerless against polluters because environmental protection officers are subordinate to and even paid by local officials who profit from and generate jobs in the same polluting industries SEPA wants to suppress.[88] In her documentary *Under the Dome*, Chai Jing asks Ding Yan the Director of the government's MEP Vehicular Pollution Research Institute about why his agency doesn't force China's vehicle manufactures to stop selling trucks with fake National Standard 4 emission stickers certifying that the vehicles meet the highest emissions standards when in fact they only meet the lowest National Standard 1. "If you (the MEP) assert you have legal authority, no one can deny that, so why not just execute the law?" Ding told her that regardless of the law, his agency had no real power to enforce it: "Nowadays, I don't dare open my mouth out of fear that [the polluters] will see that I have no teeth" (at 48:19).

Since the highly personalized and politicized state can't rely on the rule of law, on independent courts and police to enforce its environmental regulations, the government has to resort to "campaigns" to enforce environmental compliance. But this approach is hopelessly ineffectual. Beijing issues big directives, sends inspectors around, fines the polluting companies. But as often as not local government partners just pay the fines, or block regulators from shutting down the polluters, or let the regulators shut them down but then let the companies reopen under a new name. If all else fails, there's always bribery. Ministry of Environmental Protection (MEP) officials are regularly bribed to let polluters continue operations.[89]

A year after Xi Jinping launched his "war on pollution," the official press describes Beijing as

[87] Liu Jianqiang, "China's environment ministry an "utter disappointment," *China Dialogue*, March 7, 2013 at https://www.chinadialogue.net/article/show/single/en/5788-China-s-environment-ministry-an-utter-disappointment-. Tang Hao, "China's food scares show the system is bust," *China Dialogue*, 31 August 2012, at https://www.chinadialogue.net/article/show/single/en/5142-China-s-food-scares-show-the-system-is-bust.

[88] See Brian Tilt, *The Struggle for Sustainability in Rural China*, New York 2010, chapter 6. Han Wei, "Officials failing to stop textile factories dumping waste in Qiantang River," *China Dialogue*, 1 August 2013 at https://www.chinadialogue.net/article/show/single/en/5589-Officials-failing-to-stop-textile-factories-dumping-waste-in-Qiantang-River.

[89] Liu Qin, "China's environment ministry launches anti-graft reforms," *China Dialogue*, 11 March, 2015.

"all but unlivable." A study released in February 2015 declared that living in China's cities is "as deadly as smoking." [90] The government's ambitious plans to improve water quality and safety have likewise failed. The 12th Five-Year Plan goal of "completely solving rural drinking water issues" by the end of 2015 "will not be met, and some villages are going backward because of scarcity and pollution." Urban water safety has not improved and even bottled water is often contaminated. [91]

Moreover, the Center itself is conflicted about enforcing its own pollution regulations because the central government, as much as local governments, needs to maximize growth to meet its plan targets and maintain employment to keep the peace. So while it talks about cracking down on pollution, more often than not Beijing also has to prioritize job creation over environmental protection.[92] So long therefore, as there is no real separation of powers, these trends can be expected to continue and China's pollution problems will remain essentially unsolvable.

5. Bureaucratic particularism and competition drive redundancy and overinvestment: SOE bosses, local, provincial, and ministerial officials may not face market competition in the same way and to the same extent as capitalist firms, but they face intense bureaucratic competition for access to resources and appropriations from the Center. This particularistic intra-ruling class struggle over access to state funds also shapes the broad pattern of China's economic development, powering tendencies to redundancy, duplication, irrational investment and waste throughout the economy. Thus, in his book on China's growing airline industry, James Fallows writes:

> Foreign reports often present these projects as carefully coordinated expressions of China's larger ambitions for a modern transportation system and to an extent they are. But there is also bitter bureaucratic and commercial rivalries between the airline and railroad interests within China, each seizing on any opportunity to argue that it reflected the wiser and more farsighted use of the country's resources.[93]

In China's hybrid economic system, generally speaking, officials can only profit from their own units -- their localities, ministries, and SOEs. Cadres can't buy shares in SOEs anywhere in

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[90] John McGarrity, "One year on after "war" declared on pollution, Beijing air scarcely improves," *China Dialogue*, 2 February 2015. https://www.chinadialogue.net/blog/7695-One-year-on-after-war-declared-on-pollution-Beijing-air-scarcely-improves/en. Xu Nan, "China's noxious air 'as deadly as smoking: study," *China Dialogue*, 4 February 2015 at https://www.chinadialogue.net/blog/7697-China-s-noxious-air-as-deadly-as-smoking-study/en.

[91] Lu Hongqiao, "China set to miss safe rural drinking water targets," *China Dialogue*, March 5, 2015 at https://www.chinadialogue.net/article/show/single/en/7762-China-set-to-miss-safe-rural-drinking-water-targets. Huang Hao, "Village water supplies in China hit by scarcity and contamination," *China Dialogue*, March 5, 2014 at https://www.chinadialogue.net/article/show/single/en/7209-Village-water-supplies-in-China-hit-by-scarcity-and-contamination. Abigail Barnes, "China's bottled water: the next health crisis? *China Dialogue*, July 22, 2014 at https://www.chinadialogue.net/article/show/single/en/7152-China-s-bottled-water-the-next-health-crisis-.

[92] Judith Shapiro writes that "There are competing and conflicting emphases on growth, government legitimacy, clean development, and stability, creating a confusing policy-making landscape in which actors sometimes work at cross purposes or with uncertain lines of responsibility. . . Economic realities and concerns about unemployment and social unrest often push the government away from environmentally friendly action. The Ministry of Environmental Protection is hardly in a position to close the enormous state-run iron and steel plants in the great north-eastern rust belt, where unemployment is exceedingly high and shutdowns would mean even more job losses." Shapiro, *China's Environmental Challenges,* Cambridge UK 2012, pp. 69-70.

[93] *China Airborne,* p. 99.

the economy like in capitalism. No cadre in Sichuan can invest in and profit off of state-owned industries in Shanghai or Shenzhen. So if Sichuan officials want to profit from Premier Wen Jaibao's call at the launching of the 12th Five-Year Plan, to "enhance China's automobile manufacturing capability," their only way to do was to build auto plants in their own province. And that's what happens. That's why China has more than 130 auto plants, thousands of power plants (one for every three square kilometers in Jiangsu province), roads and bridges to nowhere, more than 30 airlines, near-empty airports everywhere, more than 800 shipyards, redundant ports, redundant "world financial centers," redundant shopping malls, ghost cites, etc. with all the waste those entail. These tendencies are, again, built into the bureaucratic collectivist nature of this economic system and will continue as long as this system is in effect.

6. Rampant, ineradicable corruption: Anti-corruption campaigns have been a feature of CCP inner-party struggles since long before the founding of the People's Republic. They reached their apogee of hysteria in Mao Zedong's terror campaign of "cultural revolution" against "capitalist roaders" in his own party. These days the party brags that it disciplines tens of thousands of corrupt officials every year. Prominent party and state figures tried and punished in recent years include Beijing Mayor Liu Zhihua who received a suspended death sentence in 2009 for bribery. Shanghai party chief Chen Liangyu got 18 years in 2008 for corruption. Zheng Xiaoyu, head of China's SFDA was executed in 2007 or taking bribes to approve an antibiotic blamed for at least 10 deaths. Rixin Kang, former head of China's nuclear power agency was sent to prison for life in 2011, Cheng Tonghai, former head of Sinopec got a suspended death sentence in 2009. Li Peiying, the head of Beijing's Capital Airport was executed in August 2009. Railway minister Liu Zhijun was given a suspended death sentence in 2013. Bo Xilai, the first member of the Party's Politburo to be arrested since the end of the Mao era was given a suspended death sentence in 2013. In January 2015, 70 SOE bosses were nabbed in one sweep, 16 generals in another.

Yet for all the campaigns, arrests and executions, corruption only grows worse every year. And why would it not? Opportunities for getting rich quick have grown as fast as the economy. And despite all the lurid press reports, the chances of getting caught are miniscule and for most corruption cases the consequences are not nearly so dire as the headlines imply, especially for the most elite, the biggest gangsters.[94] Prof. Geremie Barmé of the Australian National University says that in his research, for all the drama, most of the offspring of China's revolutionary founders, the so-called "second red generation" whose ranks include Xi Jinping and Bo Xilai, had largely escaped serious punishment: "In the murky corridors of Communist power, an impressive number of party gentry progeny, or the offspring of the Mao-era nomenklatura, have been implicated in corrupt practices... But word has it that, like the well-connected elites of other climes, they've enjoyed a 'soft landing': being discretely relocated, shunted into delicate retirement or quietly 'redeployed.'"[95] Bo Xilai's confinement is thought to be not too harsh, and no orange suits.

Guanxi rules. Xi Jinping's "war on corruption" is swatting competing tigers like Zhou Yangkang's clique but has conspicuously failed to swat blatantly corrupt tigers right under his

[94] China' Communist Party currently counts around more than 85 million members. Last year, the government reported that more than 71,000 cadres were "investigated for violating Party regulations." Of these only 23,000 "received Party or administrative penalties," mostly censures, and comparatively few were actually sent to prison or are executed. Pretty good odds. "Disciplinary watchdogs seek to fight factionalism within the Party," *People's Daily*, 12 January 2015 at http://en.people.cn/n/2015/0112/c90785-8834538.html.
[95] Barmé is quoted in Andrew Jacobs, "In China's antigraft campaign, small victories and bigger doubts," *New York Times*, 16 January 2015.

nose, starting with his own sister, brother-in-law, niece, and their private sector partners, all of whom have all made fortunes trading influence for lucrative state-private deals. Instead, Xi is just pushing them to cash out of their hundreds of millions of dollars in politically vulnerable investments.[96] Novelist Murong Xuecun writes in the New York Times that "the anticorruption push is more of a Stalinist purge than a genuine attempt to clean up the government." Xi, he says, has mainly targeted specific party factions while those groups that support and pledge loyalty to Xi appear untouched. He notes that in Xi's former fiefs in Fujian and Zhejian provinces, "as best I can tell not one official above the deputy provincial level has been arrested on suspicion of corruption. Recently the question was raised on the internet: Why have no 'big tigers' been found in Fujian and Zhejiang? The message was almost immediately deleted."[97]

Without the rule of law, without an independent judiciary, courts and police to prosecute and punish corrupt cadres, Xi Jinping's only option is to try to terrorize the cadres by sending down "discipline inspection teams" to punish local transgressors, and jail some blatant offenders. The Chinese call it "killing the chickens to scare the monkeys." But after the terror passes and the teams return to Beijing, it's back to business as usual. So after wrapping up the second round of two-month inspections in 10 provinces launched in July 2014, Wang Qishan, head of the Central Commission for Discipline Inspection (CCDI) warned officials "Don't go back on your old ways when our backs are turned ... we will come back and catch you off guard."[98] But really, what can the poor CCDI do? The Chinese Communist Party is a cesspool of corruption from top to bottom. The CCDI can't arrest the entire party. Xi needs these officials to run his economy and administration, but most are well enough connected to avoid his terrorists. Xi can't trust the police to systematically enforce anti-corruption measures because the police themselves are notoriously corrupt. Even his corruption investigators can't be trusted (1575 corruption investigators were themselves busted in 2014). By October, Wang was complaining that the cadres were not taking him seriously: "We have stepped up the anti-graft campaign but some party cadres are still undeterred. Some have become even more corrupt." Wang "vowed to ramp up inspections of the lower tiers of government." [99] Good luck on that, Mr. Wang.

Pursued with too much vigor, Xi's anti-corruption campaign against senior officials risks not only unsettling elite stability but destroying what's left of the party's credibility. As a retired princeling military officer said about the most recent campaign against graft and profiteering in the army: *"You can't do it too much, otherwise the party comes out too black, and the leaders won't like it."* [100] Of course, self-limiting anti-corruption campaigns only guarantee that corruption will continue to grow. Moreover, the anti-graft drive is also hurting economic growth as cadres sit on their hands, fearing to do any work that might bring complication and companies pull back from spending on luxury goods, feasting, champagne, cars – the spending by the 1% that drives so much growth in China, as in the West.

What's worse is that with the spectacle of China's political leadership by "communist" princelings-turned-billionaires, corruption rots the whole society from the top down. Whereas

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[96] Michael Forsythe, "As China's leader fights graft, his relatives shed assets," *New York Times,* 17 June 2014.
[97] "China's selective crackdown," 17 January 2015.
[98] Alice Yan, "Don't go back on your old ways when our backs are turned, CCDI warns cadres," *South China Morning Post*, 5 November 2014.
[99] Andrea Chen, "Some cadres shrugging off anti-corruption campaign, graft-buster warns," *South China Morning Press*, 25 October 2014.
[100] Jane Perlez, "Corruption in military poses a test for China," *New York Times,* 14 November 2012.

in the 1980s, millions of China's youth were idealistic passionate protestors for democracy, today many of China's millennial generation have lost all hope for change, many have been seduced by capitalism, consumerism, become cynical and indifferent toward politics, human rights, the environment, insouciant toward CCP lies and repression. Others are just giving up and emigrating.

III. BRAKING THE DRIVE TO COLLAPSE

It goes without saying that the Chinese have every right to modernize, industrialize, and improve their material standard of living. But the problem is that capitalism can't sustainably provide this for the Chinese, the Americans, or anyone anymore. As many Chinese say today, "Who cares if we have the world's highest GDP if we can't live here? The Chinese don't need a higher standard of living based on endless consumerism. They need a better mode of life: clean unpolluted air, water and soil, safe and nutritious food, comprehensive public health care, safe, quality housing, a public transportation system centered on urban bicycles and public transit instead of cars and ring roads. And more. We all need to live better by consuming less and consuming rationally, fairly, and sustainably. Given the planet's desperate shape today, the only way humanity is going to survive this century is if developed countries and developing countries contract and converge their resource consumption and pollution around a sustainable global average that will permit the world's peoples to live in tolerable conditions while reserving resources for future generations and other life forms.[101]

As China goes, so goes the world

Climate scientists tell us that, given all the failed promises to date, the backpedaling and soaring CO_2 emissions, we now face a "climate emergency." On present trends we're on course to a 4°- 6° Centigrade warming before the end of this century: if we don't radically suppress fossil fuel burning over the next few decades to keep the warming below the 2° Centigrade threshold, planetary heating will accelerate beyond any human power to stop it and global ecological collapse will be unavoidable. To have a chance of staying below 2°, the industrialized nations and China must cut carbon emissions by 40-70 percent globally by 2050 as compared to 2010, which would require cuts on the order of 6-10 percent per year. [102] China would have to cut its industrial emissions by 30 - 90% as compared to 2010, the variance depending upon expected growth rates and other assumptions.[103] The only way China could suppress its GHG emissions by anything like that amount would be to impose a drastic across-the-board economic contraction, including radical retrenchments and shutdowns of most of the industries that have been built up in the last three decades of market mania. I'm sure this sounds extreme, if no completely crazy. But I don't see what other conclusion we can draw from the science. On the positive side, as I surveyed above, since so

[101] On this see my "Capitalism and the destruction of life on earth: six theses on saving the humans" *Real-world Economics Review*, July 2013 at http://www.paecon.net/PAEReview/issue64/Smith64.pdf and my "Climate crisis, the deindustrialization imperative, and the jobs vs. environment dilemma" in *Truthout,* 17 November, 2014 at http://www.truth-out.org/news/item/27226-climate-crisis-the-deindustrialization-imperative-and-the-jobs-vs-environment-dilemma.

[102] IPCC, Climate Change 2014: IPCC Fifth Assessment Synthesis Report (November 2014) at http://www.ipcc.ch/report/ar5/syr/. James Hansen, *Storms of My Grandchildren,* New York 2009.

[103] Ecofys, WWF Report 2015, It's Time to peak: why China's corporate sector needs to set ambitious greenhouse gas reduction targets," (WWF, Februarry 2015) p. 11 at http://www.ecofys.com/files/files/wwf-ecofys-2015-it-is-time-to-peak.pdf.

much of China's resource waste and pollution is just completely unnecessary and harmful, what sounds like extreme austerity could prove just the opposite: liberating, a move to that "better mode of life." Such an emergency plan would have to include at least the following elements:

- **Shut down all but critically essential coal-fired power plants** needed as a temporary measure to keep the lights and heat on and essential public services in operation until renewable replacements can be brought on line. Abandon the coal gasification projects and phase out oil- and gas-powered fuel plants as quickly as possible. Force a rapid transition of energy generation to renewable wind, water and solar energy sources but with the goal of producing much less electricity overall, closer to what China produced in the early 1980s before the market-driven industrialization boom. The U.S. and other developed countries should be obliged to provide extensive technical and material assistance to facilitate this transition.

- **Shut down most of the auto industry**. This industry is just a total waste of resources and is the second biggest contributor to global warming. Most public transportation will have shift to back to bicycles, busses, trains, and subways -- basically a modernized and expanded version of what the Chinese had in the early 1980s before the auto craze. But the air will be cleaner, transportation will be faster, people will be healthier, and immense resources will be conserved.

- **Shut down most of the coastal export industries:** Most of China's coastal export industries are geared to producing unsustainable disposable products, as noted above. There is just no way to have a sustainable economy in China or anywhere if we don't abolish the throwaway repetitive-consumption industries in China and around the world.

- **Retrench or close down aviation, shipping, and other redundant and unsustainable transportation industries.** Abandon the "aviation superpower" boondoggle. Abandon further expansion of the high-speed train network. China has already built more planes, trains and subways than it needs by any rational accounting of needs. Same with shipbuilding industry, most of which is geared to container and bulk carrier shipping. This industry needs to be drastically reduced as China's imports and exports decline with industrial contraction.

- **Shut down most of the construction industry:** Even with China's huge population, the country is massively overbuilt, littered with useless, superfluous buildings, housing, highways, bridges, airports, and so on. Some of this can be repurposed. Some should be demolished and the lands returned to farmlands, wetlands, parks or other beneficial use.

- **Abandon the urbanization drive** and actively promote re-ruralization. Urban life has its advantages but urban residents consume several times the energy and natural resources and generate several times as much pollution as rural farm families. Besides, most of the tens of millions of Chinese who were relocated to the cities in the last three decades did not go voluntarily; they were forced off their farms by land-grabbing profiteering local officials. Those ex-farmers who wish to return to the land should be permitted to do so. There is no law of nature that says farm families must be impoverished. In today's world, family farmers with adequate land and decent technology, who can market their own produce so they don't get ripped off by middlemen, and who are not under the thumb of banks, landlords or state-landlords, can do very well.[104] China's farmers are poor because the state has been squeezing them to subsidize industrialization. The best way to raise rural living standards is give them security in their farms and pay them fair prices for their produce.

- **Abandon the imperial plunder and Han colonization of the West:** Xinjiang, Tibet and Mongolia are not ethnically Chinese. If the Chinese government abandons its market-based development strategy it would have no "need" to plunder the natural resources of the West, those peoples can be left in peace to develop at their own pace and in accordance with their ecological limits. And after wrecking so much of their environment, the Chinese owe them some help.

- **Launch an emergency national plan for environmental remediation and restoration of public health**: Chinese environmental and health experts have called for a comprehensive integrated plan to address the nation's environmental and public health issues.[105] Experts say it could take generations to restore China's farmlands, rivers and lakes to tolerable biological health though, as noted above, in places this may be impossible. A significant share of the costs of this remediation should also be borne by the western nations whose companies callously contributed to this pollution by offshoring their dirtiest industries to China.

- **Launch a national public works jobs program:** If China is going to have to shut down so much of its industrial economy to brake the drive to ecological collapse, then it is going to have to find or create new jobs for all those displaced workers. In Guangdong Province alone, there are something like 40 million manufacturing workers, most of them dedicated to producing the sorts of needless products described above. Forty million unemployed workers would be a big problem. And that's just Guangdong. But unbreathable air, undrinkable water, unsafe food, polluted farmland, epidemic cancer, rising temperatures and rising seas along coastal China are bigger problems. So there's just no way around this very inconvenient truth. Making bad stuff has to stop; stopping it will unemploy vast numbers of workers, and other, non-destructive, low-carbon jobs have to be found or created for them. Fortunately, in China, there is no shortage other socially and environmentally useful

[104] Eg. Chrystia Freeland, "The triumph of the family farm," *The Atlantic*, 13 June 2012. Also: "Rebuilding America's Economy with Family Farm-centered food systems," n.a., *Farm Aid,* 2013 at www.farmaid.org/makethecase. Alan Bjerga, "Organic lets family farms prosper in industrial-agriculture era," *Bloomberg News*, 28 June 2012 at http://www.bloomberg.com/news/2012-06-28/organic-lets-family-farms-prosper-in-industrial-agriculture-era.html.

[105] Eg. He Guangwei, "China faces long battle to clean up its polluted soil," He Guangwei, "The victims of China's soil pollution crisis, Chu Han, "The human cost of living in the 'mercury capital' of China [Guizhou province]," Angel Hu and Andrew Moffet, "China's soil pollution crisis still buried in mystery," all in *Pollution and Health in China: Confronting the Human Crisis*, special issue of *China Dialogue*, September 9, 2014 (in Chinese with some English summaries) at
https://s3.amazonaws.com/cd.live/uploads/content/file_en/7289/chinadialogue_health_journal.pdf.

> work to do: environmental remediation, reforestation, transitioning to organic farming, transitioning to renewable energy, rebuilding and expanding public social services, rebuilding the social safety net, especially for China's ageing population, and much else.

Pan Yue was certainly prescient: the Chinese miracle has come to an end because the environment can no longer keep pace. The question is, can the Chinese find a way to grab hold of the brakes and wrench this this locomotive of destruction to a halt before it hurls the country off the cliff.

Revolution or collapse?

One thing is certain: this locomotive is not going to be stopped so long as the Communist Party has its grip on the controls. The Chinese Communist Party is locked in a death spiral. It can't rein in corruption because the party is built on corruption, thrives on corruption and can't police itself. It can't rein in ravenous resource consumption and suicidal pollution because, given its dependence on the market to generate new jobs, it has to prioritize growth over the environment like capitalist governments everywhere. It can't even discipline its own subordinate officials to enforce and obey the government's environmental, food and drug safety, building codes and similar laws because in this system subordinate officials aren't necessarily subordinate and can often mobilize their family and *guanxi*-based backers to defend their interests and thwart Beijing. So long as this basic structural class/property arrangement remains in effect, no top-down "war on pollutions" or "war on corruption" is going to change this system or brake China's trajectory to ecological collapse. Given the foregoing, I just don't see how China's spiral to collapse can be reversed short of social revolution.

China's Communist Party seems all-powerful, unassailable. But it's not. It's frightened, desperate, and disintegrating. It faces unprecedented threats: near daily industrial strikes, militant and often violent protests over land grabs, chemical plants, incinerators, power plants and the like, "terrorist" attacks in from Xinjiang, and even worse, subversive thought that just can't be stopped by the Great Firewall. Chai Jing's *Under the Dome* had three hundred million downloads before the government took it down off the web after a week and a half. Who knows what spark will light the next social explosion? Resistance is growing as pollution and public health worsens, as it becomes harder to sustain that 8 percent growth rate to stave off unrest, as Xi Jinping's war on corruption only serves to publicize the unregenerate character of the entire Communist Party and underscores its incapacity to solve any of China's huge problems. Since Xi took over 2012, he's been determined to save China's Communist Party from the fate of its Soviet cousin. Xi ridiculed Gorbachev's "weakness" and cast himself as the tough-guy Godfather, cracking down on the press, the internet and social media, religious groups, democrats, NGOs, western joint-venture partners, and "western ideas." But this repression just reveals his weakness not his strength. The more he harasses, fines, and drives western joint-venture partners out of China, the less access he will have to their technology and the less competitive his SOEs will become. The more tightly he polices culture and censors the internet, the faster China's intellectuals, scientists, professionals and college graduates will pack up and move to Australia. Nothing demonstrates this weakness and lack of self-confidence more than the party's very public disintegration: the government bitterly complains that large numbers of "ready-to-flee" "naked officials" (so-called because they've sent their families and money to Los Angeles or Vancouver), are scheming to follow them. Surveys show that half of China's rich (most of whom are Communist Party members) have either left the country or are planning to do so as soon as they can.[106] China has to be the first nation in history in which significant numbers of its own triumphant ruling class are abandoning their own success story en masse. Today, Xi Jinping faces subversion and resistance everywhere he looks yet he can't even count on his comrades. To add to his headaches, Godfather Xi now faces an in-your-face democracy movement in Hong Kong that refuses to die. From workers strikes to environmental protests to Occupy Central for Love and Peace, these struggles and movements are fragmented, inchoate and unorganized, so far, but they all share a common demand: bottom-up democracy. Therein lies China's best hope.

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SUGGESTED CITATION: Richard Smith, "China's Communist-Capitalist ecological apocalypse", *real-world economics review*, issue no. 71, 28 May 2015, pp. 19-63, http://www.paecon.net/PAEReview/issue71/Smith71.pdf

[106] "Almost half of wealthy Chinese want to leave, study shows," *Wall Street Journal*, 5 September 2014. Benjamin Carlson, "As war on corruption mounts, China's rich flee to America, *Global Post,* 9 February 2014. John Kennedy, "China has at least 1.18 million ready-to-flee 'naked officials', anti-corruption rant reveals," *South China Morning Post*, 27 February 27, 2013 at http://www.scmp.com/comment/blogs/article/1159628/china-has-least-118-million-ready-flee-naked-officials-anti-corruption.

Trends in US income inequality[1]

Pavlina R. Tcherneva[2] [Bard College, New York, USA]

Do the majority of Americans share in the benefits of economic recoveries? Does a rising tide, as we are often told, lift all boats? *Growth for Whom?* (Tcherneva 2014a) shows changes in the share of income growth captured by different cohorts during economic expansions (see Tcherneva 2014b for further analysis). It turns out that in the post-war period, with every subsequent expansion, a smaller and smaller share of the gains in income growth have gone to the bottom 90 percent of families. Worse, in the latest expansion, while the economy has grown and average real income has recovered from its 2008 lows, all of the growth has gone to the wealthiest 10 percent of families, and the income of the bottom 90 percent has fallen. Most Americans have not felt that they have been part of the expansion. We have reached a situation where a rising tide sinks most boats.

This policy note provides a broader overview of the increasingly unequal distribution of income growth during expansions, examines some of the changes that occurred from 2012 to 2013, and identifies a disturbing business cycle trend. It also suggests that policy must go beyond the tax system if we are serious about reversing the drastic worsening of income inequality.

Growth and inequality: 1949–2012, including capital gains

The figures in this policy note are based on Piketty and Saez data (2003; updated in 2015), which measure real average market income before taxes and transfers. Market income includes wages and salaries, entrepreneurial income, dividends, interest, rents, and capital gains (data excluding capital gains are presented below). For Figures 1 through 7, the x-axis shows expansion periods only (from trough to peak year), as defined by NBER business cycle data.

Thomas Piketty (2014) and many other scholars have illustrated the rapid worsening of US income inequality since the 1970s. Coupling these findings with those in Figure 1 suggests that the way we grow the economy erodes the income distribution (business cycle data are also presented later).[3] As the economy grows, the wealthy are getting a bigger and bigger slice of the income pie, perpetuating a vicious cycle where inequality breeds more inequality.

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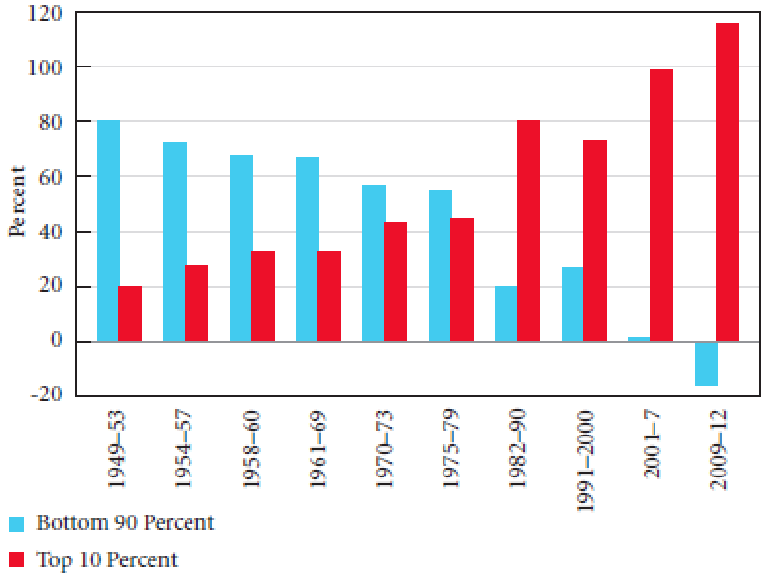
[1] This paper originally appeared in the Levy Institute Policy Note series http://www.levyinstitute.org/publications/when-a-rising-tide-sinks-most-boats-trends-in-us-income-inequality .

[2] Research Associate Pavlina R. Tcherneva is an assistant professor of economics at Bard College.

[3] I examine why growth in the United States has increasingly brought income inequality in Tcherneva (2014a and 2014b).

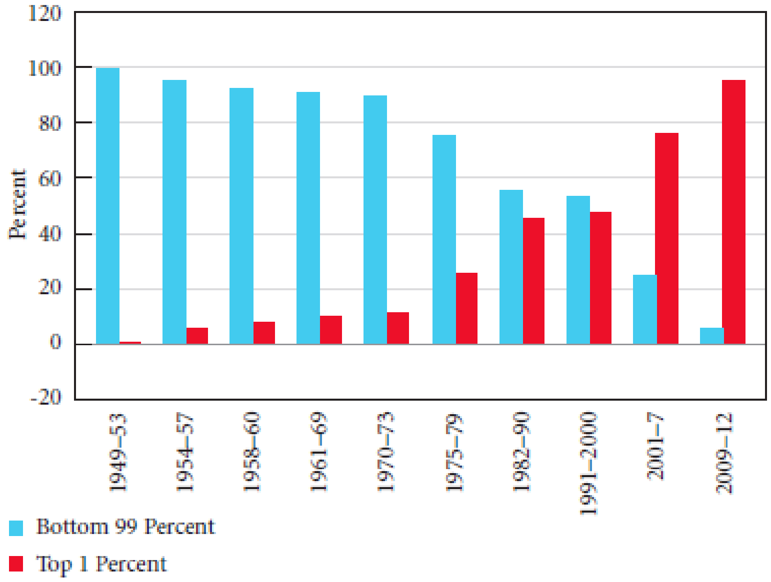
Figure 1 90 Percent vs. 10 Percent: Distribution of Average Income Growth during Expansions (including capital gains)



Sources: Author's calculations based on Piketty/Saez data and NBER

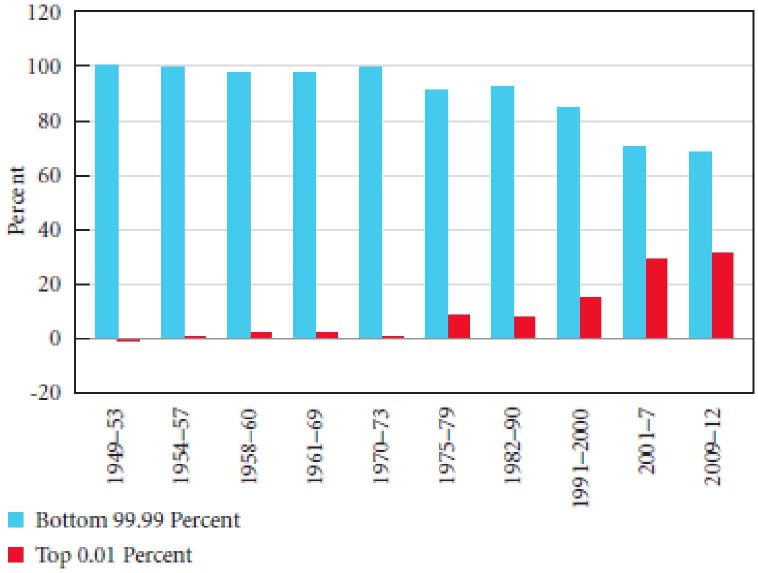
And not all wealthy families are created equal. Decomposing the top 10 percent further, we can see that during the latest expansion, from 2009 to 2012 (the data are updated to 2013 below), the top 1 percent captured 95 percent of the growth pie (Figure 2), whereas the 0.01 percent captured 32 percent (Figure 3). A stunning one-third of all income growth has gone to a tiny sliver of the wealthiest families in the United States.

Figure 2 99 Percent vs. 1 Percent: Distribution of Average Income Growth during Expansions (including capital gains)



Sources: Author's calculations based on Piketty/Saez data and NBER

Figure 3 99.99 Percent vs. 0.01 Percent: Distribution of Average Income Growth during Expansions (including capital gains)

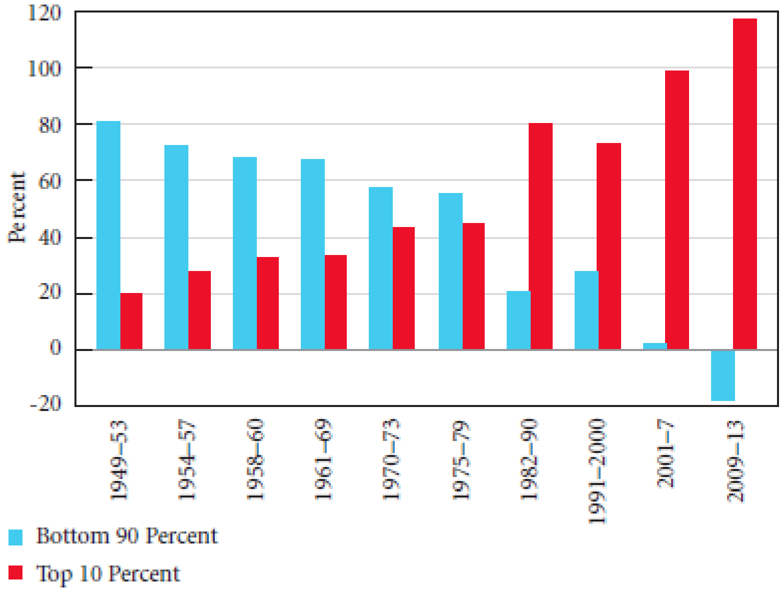


Sources: Author's calculations based on Piketty/Saez data and NBER

Growth and inequality: 1949–2013, including capital gains

Updating Figure 1 with the latest 2013 data illustrates the exact same trend (see Figure 4).

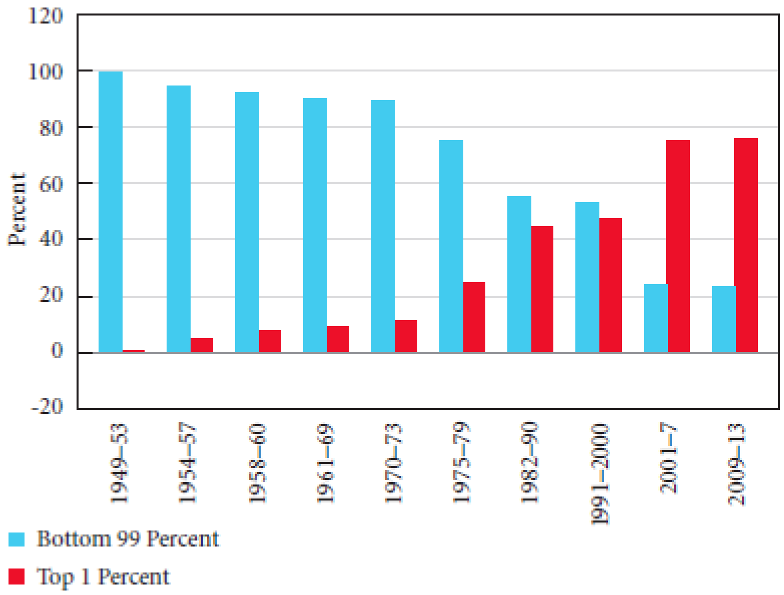
Figure 4 90 Percent vs. 10 Percent: Distribution of Average Income Growth during Expansions (including capital gains)



Sources: Author's calculations based on Piketty/Saez data and NBER

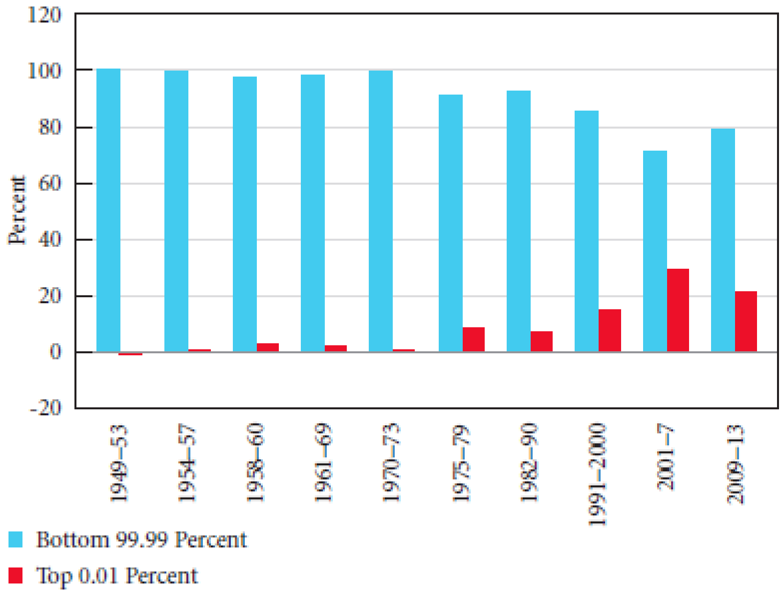
When we look at the wealthiest cohorts, however, the data seem to indicate a slight shift in trend. When comparing Figures 2 and 3 to Figures 5 and 6, it would seem that there has been an improvement in the way gains from growth are shared by the bottom 99 percent and 99.99 percent.

Figure 5 99 Percent vs. 1 Percent: Distribution of Average Income Growth during Expansions (including capital gains)



Sources: Author's calculations based on Piketty/Saez data and NBER

Figure 6 99.99 Percent vs. 0.01 Percent: Distribution of Average Income Growth during Expansions (including capital gains)



Sources: Author's calculations based on Piketty/Saez data and NBER

This is in part due to a number of tax changes that occurred in 2013. The data in these graphs are pre-tax, pre-transfer, but changes in tax rates affect the way income is reported on a tax return. For example, in 2013, a series of Bush-era tax cuts expired. For the wealthiest 2 percent of taxpayers, ordinary income is now taxed at 39.6 percent, instead of the earlier rate of 35 percent. Also, taxpayers in that bracket now pay 20 percent on long-term capital gains and qualified dividends, instead of the lower Bush-era tax rate of 15 percent.

When comparing the two most recent estimates of real average income for the top 1 percent and top 0.01 percent, one notices that there was a spike in reported income for 2012 in the latest estimate (compared to what was initially reported). This indicates that the ultrarich are pulling income forward and reporting it in the 2012 tax return, when the preferential tax treatments were still in effect. In a sense, preliminary estimates of 2013 income are “too low” (Saez 2015). Thus, the 2013 tax changes have likely triggered an improvement in the income distribution, due to the way the wealthy are reporting their income.

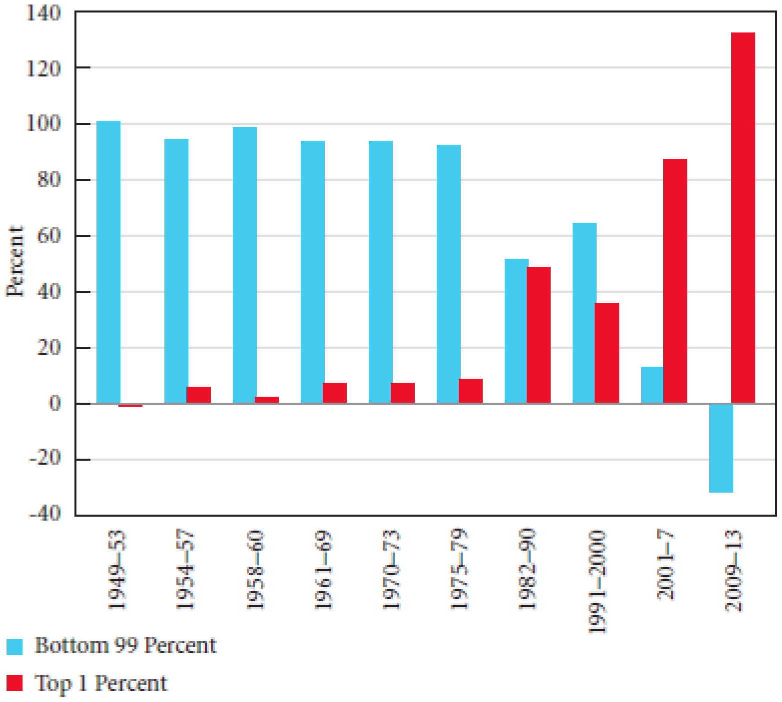
This statistical improvement is misleading for another reason. Consider what has happened to the incomes of the bottom 99 percent of families in the meantime. Average real income for the bottom 99 percent, which fell after the crash – from $50,400 (2007) to $47,000 (2008) – *continued* falling during the expansion, to $44,300 (until 2011). It finally showed a small uptick in 2012, to $44,900, but in 2013 it remained essentially flat. Thus, any “improvement” in the income distribution is not due to improvements in the well-being of the bottom 99 percent of households.

Since the wealthy have greater discretion over the size of their income (a greater proportion of their income is composed of capital gains) and can elect to realize these gains at different times, one might want to examine what happens to the distribution of income growth once capital gains are excluded. To be sure, capital gains are a crucial component of income for the wealthy, and any analysis that excludes them will be limited in scope. Because capital gains can be taken as a lump sum in a given year, looking at tax return data is not an ideal way of examining them. A much better method would be to annuitize them (as in Wolff and Zacharias 2009). Nevertheless, considering the income growth distribution once capital gains have been excluded can provide some insights.

Growth and Inequality, 1949–2013, excluding Capital Gains

During 2009–13, the wealthiest 1 percent of families captured more than 100 percent of the income growth (Figure 7). That means that market incomes of the bottom 99 percent, excluding capital gains, *fell* during the 2009–13 expansion (from average real income of $44,000 in 2009 to $43,800 in 2013). The same is true for the bottom 90 percent, whose average real incomes fell from $31,600 in 2009 to $30,980 in 2013, while the incomes of the wealthy 10 percent rose.

Figure 7 99 Percent vs. 1 Percent: Distribution of Average Income Growth during Expansions (excluding capital gains)



Sources: Author's calculations based on Piketty/Saez data and NBER

Comparing Figure 5 to Figure 7 (including and excluding capital gains, respectively, for the 99 percent and 1 percent), one notices that the distribution of income growth appears *less* unequal when capital gains are included. At first, this may seem like a counterintuitive result. What the data illustrate is that, even though capital gains are a very small share of income for the bottom 99 percent of families (only about 2 percent of their income comes from capital gains), they are the difference between a shrinking income and a marginally growing income for those families.

Without capital gains, average real income for the bottom 99 percent fell by $127 from 2009 to 2013, but including them it rose by a meager $451. For the rich, however, *average incomes grew with or without capital gains*, even though the latter make up a proportionately larger share of income for the wealthy (between a quarter and a third of their income) and capital gains contributed $91,444 to their average income growth. In essence, the bottom 99 percent are counting on their very small capital gains to keep themselves afloat, because their shrinking wages are not doing the job.

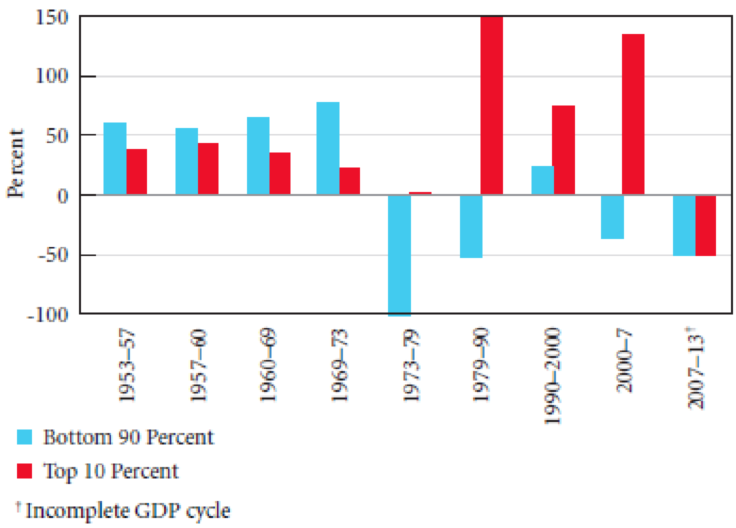
Economic cycles and inequality

Piketty's work demonstrates that income inequality has been worsening rapidly over the last four decades. The figures above illustrate the same trend for all consecutive expansions since the 1970s: the majority of the growth has gone to the wealthy. For that period, we can therefore conclude that even if the wealthy lose disproportionately more of their income as the economy enters a recession, they must more than make up their losses when the economy expands. The data below corroborate this conclusion.

We can examine changes in real income over the economic cycle in two ways. The first is to consider what happens during the business cycle – that is, from peak GDP to subsequent peak – as reported by the NBER (Figure 8). Real incomes, however, rise, fall, and recover at a somewhat different pace from GDP. So we can also consider the income cycle by identifying actual peaks in the real income data from Piketty and Saez (2003; updated 2015). In other words, by looking at income cycles, we can also answer the question "When real income falls and recovers from one peak to the next, who gains?" (Figure 9.) The GDP cycle and real income cycle data do not correspond perfectly to each other but they are very close. In either case, what is notable is that the trend toward greater inequality is even more apparent over the entire economic cycle (GDP or income). Worse, since the '70s, the incomes of the rich have recovered almost immediately after a downturn by capturing the overwhelming majority (and sometimes all) of the income growth that occurs in the period spanning only one year after the peak of the income cycle to the subsequent peak (Figure 10).

The GDP and income cycle charts (Figures 8 and 9) confirm that, after the '70s, the wealthy capture most of the income growth in most economic cycles. Especially troubling is that during each of the last two periods, the incomes of the bottom 90 percent have shrunk (including or excluding capital gains). One must interpret the 2007–13 period with caution. Average incomes have still not recovered their 2007 highs, and the decline was about equally shared between the bottom 90 percent and top 10 percent of households. Nevertheless, this last period does not show the full picture, because the business cycle is not yet complete. Thus, we cannot draw too many conclusions yet about the distribution of income growth during this cycle.[4]

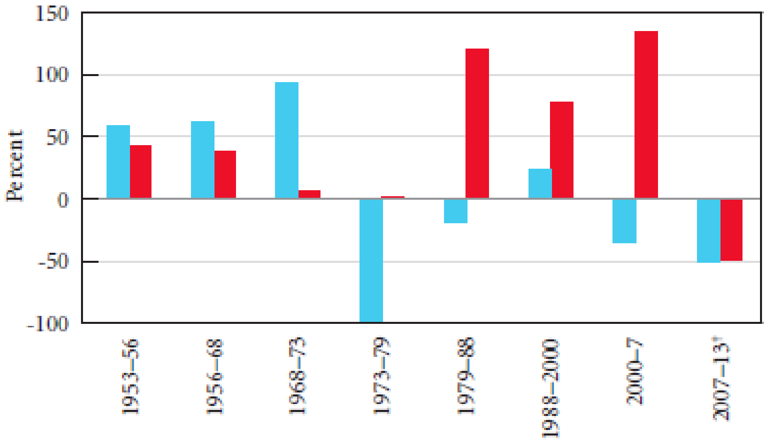
Figure 8 90 Percent vs. 10 Percent: Distribution of Income Gains during GDP Cycles (peak to peak)



Sources: Author's calculations based on Piketty/Saez data and NBER

[4] To account for the 2013 tax return reporting aberration in the data discussed above, I average the 2012 and 2013 income data in Figures 8-10.

Figure 9 90 Percent vs. 10 Percent: Distribution of Income Gains during Income Cycles (peak to peak)

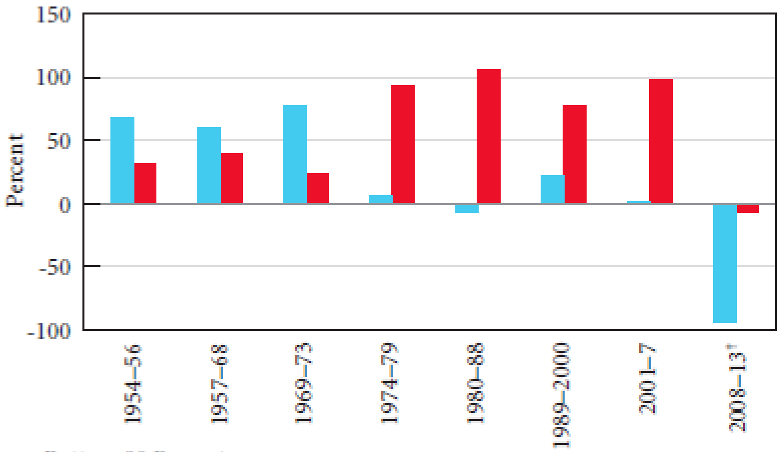


■ Bottom 90 Percent
■ Top 10 Percent
† Incomplete income cycle

Sources: Author's calculations based on Piketty/Saez data

Consider, however, what happens to the distribution of income growth from one year after the peak of the income cycle until the subsequent peak (Figure 10). It shows a surprising trend. Since the '70s, when we look at the period beginning only *one* year after a downturn, the cycle delivers between 78 percent and 107 percent of the income growth to the wealthiest 10 percent of families.

Figure 10 90 Percent vs. 10 Percent: Distribution of Income Gains One Year after the Peak of an Income Cycle to Subsequent Peak



■ Bottom 90 Percent
■ Top 10 Percent
† Incomplete income cycle

Sources: Author's calculations based on Piketty/Saez data

Observe several periods. From 1973 to 1979, the incomes of the wealthy barely grew (Figure 9). But if one examines what happened beginning one year after the peak of that income cycle (Figure 10), one notices that during 1974–79 they captured 93 percent of the income growth. In other words, though their losses in that first year were large, they recovered all of those losses through the remaining years by capturing virtually all of the growth for that period. Furthermore, since 1973, the bottom 90 percent of households have experienced declining real incomes during four out of the five income cycles (Figures 8 and 9). Finally, during the last period, from 2007 to 2013, average real income in the economy shrank, and those losses were shared about equally between the bottom 90 percent and top 10 percent (Figures 8 and 9). But during 2008–13 (Figure 10), income for the bottom 90 percent fell proportionately more than that for the wealthiest 10 percent, meaning that incomes of the latter turned around more rapidly (even though they are still below their 2007 highs). Indeed, during 2009–13, real average income for the wealthiest 10 percent of households rose by 12 percent (not shown), while that for the bottom 90 percent was still falling. To recap, this quick turnaround in the incomes of the wealthy has been the norm for the majority of economic cycles since the mid-70s.

The economic cycle data again confirm that the *way we grow* recovers the incomes of the top 10 percent first.

An important culprit: the shift in government policy

The trends illustrated above are neither an accident nor inescapable. Indeed, during the Golden Age of American capitalism, the majority of economic growth was shared by the majority of families. As Hyman P. Minsky (1992) argued, there are many varieties of capitalism, some more stable than others – and, we can add, some more equitable than others. In the immediate post-war era, when government prioritized pro-employment and pro-wage policies, growth brought shared prosperity. Wages were rising in lockstep with productivity, public investment and public works were still a standard government response to downturns, the financial sector took only 7–15 percent of total corporate profits (compared to 30 percent today, after peaking at over 40 percent in the early 2000s), and long-term unemployment was a small share of total unemployment. The focus on pro-employment and pro-wage policies slowly weakened, but after the '70s the shift was decisive – away from labor markets and toward top marginal tax rates and financial markets.

Trends in income distribution are largely underwritten by the policy regime in place. In no small measure, they are shaped by the method used to stimulate economic growth; by the *direction* of government spending and tax policy, for instance. When policy began prioritizing the reduction in top marginal tax rates (i.e., Reagan-style trickle-down economics) in place of an employment- and wage-led strategy, a growing economy began favoring the incomes of the ultra-rich, by design. And when stabilization policies began focusing on recovering the banking and financial sectors first, households whose incomes were tied to stock market performance (i.e., wealthy families disproportionately benefiting from stock options, bonuses, capital gains, and dividends) experienced faster income growth than the rest.

Most families still get their incomes from wages and salaries, which are derived from increasingly anemic and precarious labor markets. And indeed, since the 70s, in virtually every consecutive expansion, lost payrolls have taken longer and longer to recover. The abandonment of the goal of tight full employment has unsurprisingly meant that incomes of those who depend on employment, wages, and salaries would be the last to grow (if at all). When jobless recoveries became the norm and wages and salaries remained stagnant, the families who counted on them shared few, if any, of the benefits from expansions (Tcherneva 2014b).

Changing directions: refocusing policy to tackle inequality

John Maynard Keynes ([1936] 1973) famously said that the two outstanding faults of economic society were the failure to secure full employment and the arbitrary and inequitable distribution of income. I have argued (Tcherneva 2014b) that the failure to solve the first problem (achieve tight full employment at decent wages for all) has contributed to the worsening of the second (income inequality). A policy orientation that pursues chock-full employment and decent wages can go a long way toward lifting the floor and filling the middle, delivering shared prosperity.

When we look exclusively to the tax system for policy solutions to inequality, we miss this more important piece of the puzzle. Returning to a more equitable variety of capitalism requires far more than just rolling back regressive tax cuts; it requires resuscitating and modernizing those labor-market-focused policies left behind by the shift to a trickle-down, financial-sector-driven policy regime. Redesigning the tax structure alone will not do the job. Aggressive increases in top marginal tax rates will reduce incomes at the top and thereby improve the income distribution, but more extensive progress will not be made until steps are taken to ensure that incomes at the bottom and the middle rise faster than those at the top. This can be achieved by refocusing policy on labor markets – including a mechanism that links wage increases to productivity gains, prioritizes decent work for decent pay, commits to pay equity, reexamines comparable worth policies, and, importantly, implements an effective employment safety net at living wages for all. These are policies that would ensure that (1) the incomes of the vast majority of people grow rather than shrink in expansions and (2) the majority of the gains from growth go to the majority of families.

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SUGGESTED CITATION: Pavlina R. Tcherneva, "When a rising tide sinks most boats: trends in US income inequality", *real-world economics review*, issue no. 71, 28 May 2015, pp.64-74, http://www.paecon.net/PAEReview/issue71/Tcherneva71.pdf

The market economy: theory, ideology and reality[1]

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Abstract
Malcolm Adiseshiah, whose 105th birth anniversary we observe today, is remembered in most parts of the world as the Deputy Director General of the UNESCO which had for long been something of a cultural forum of the affluent nations, but which became a powerful agency for development and education globally in the 1950s and 1960s thanks to his dynamic leadership. After he returned to India in 1970 he came to be known as the founder, along with his wife, Elizabeth, of the Madras Institute of Development Studies, then as Vice-Chancellor of the Madras University, member of the Rajya Sabha and pioneer of the adult literacy movement. But it is important to recall that he started his career as a college teacher, first in Calcutta and then after taking a Ph.D. from the London School of Economics in the Madras Christian College where he was noted for his academic scholarship. In his semi-autobiographical work, *Let My Country Awake* he has recorded that a great deal of his learning came from another source: "... the villages of Bengal and South India with their rural service centres where we worked out the economics of hand-pounded rice, hand-made paper, handloom textiles, crop rotation and rural credit, rural medicine and sanitation, adult literacy and curriculum reform. It was there that I found the testing ground for the many ideas and plans that I carried with me to UNESCO in Paris and from there to the four corners of the earth." Thus his learning was from two sources: academic centres and books on the one hand and from real life situations on the other. It is to remind us of these two sources of learning that I have chosen the theme: The market economy: theory, ideology and reality for this year's Founder's Day Lecture.

Let me start with something of a puzzle: I taught economics for a quarter of a century. When I came to the Madras Institute of Development Studies there was no teaching to do. One of my major responsibilities was guiding Ph.D. research. And I have worked with some 20 Ph.D. scholars. My policy was to let the scholar select his/ her area of research, but with one condition, that the selected topic must be about a real life situation. This meant that I was involved with a wide range of research themes – small-scale industries, urbanisation, fisheries, market conditions, agrarian transformation, handloom production and sales, labour relations, the millet economy and many more. And I used each one of these as a topic for my own learning. In order to be of help to the scholars, I was of necessity learning with them. What came as something of a surprise to me was that hardly any of them (including those whom I had taught) had used the "theory" they learned during their collegiate studies! That led me to ponder over what we teach and how we learn. Through this lecture I wish to share with you some of my thoughts on this crucial issue.

I take it that all learning is geared to the problem and process of understanding. This is true of learning at home (where all learning begins) in schools, colleges and universities and in the wider arena of life outside educational institutions. The aim of theory is, or must be, to serve as an aid to this understanding. Theory, certainly, is not and cannot be a true picture of life. Even if it were, how well can we understand a person from her photograph, or a country from

[1] This paper was the Founder's Day Lecture of the Madras Institute of Development Studies delivered on April 18, 2015, and it will appear in the next issue of the Institute's *Journal, Review of Development and Change*.

its map?[2] Because of this unavoidable lack of correspondence between theory and the reality it represents, there is always the possibility that theory can lead to *mis*understanding or *mis*interpretation. When it happens (deliberately or otherwise) this can become a tool for propaganda. Consequently, there has to be a non-theoretical (not necessarily *anti*-theoretical) procedure for understanding the topic, institution, or whatever it may be that one is after[3]. Taking the market economy or the market as the topic, I propose to examine the theory (theories) about it, the manner in which it lends itself to propaganda, and a way of having a more realistic understanding about it. I shall begin with an elementary theory of the market and the manner in which it has become a tool of propaganda in Section I. In Section II which is the main body of the Lecture, I shall suggest a procedure for a more realistic understanding of the market and the market economy. In Section III, I shall go back to the nature of market theory and consider why it often becomes the source for propaganda.

Section I. The theory of the market (the market economy) – an elementary exposition

The theory of the market and of the market economy taught in our colleges and increasingly even in our schools (as also in most parts of what may be described as the Anglo-American world) is the Neo-classical Theory which claims to have universal validity. It postulates the economy as consisting of individuals who are considered to be concerned about their own selfish interests, indeed as those who are trying, at least in the economic realm, to maximize their expected satisfaction. Each one is also considered to have some initial endowments, some of them in excess of their requirements. So they look around and see that those around them are also in similar situations, except that their bundle of goods is different. Each one, therefore, wishes to get rid of some of the excess goods and get some goods that they do not have or do not have enough. The individuals, therefore, can enter into deals with others, exchanging goods of which they have an excess and obtaining goods that they wish to have. If you can imagine a situation where there are only two individuals, A and B, and two goods, x and y, A having an excess of x and B and excess of y, it can be seen that the two will enter into a deal (after hard bargaining because each one is trying to maximize his expected satisfaction) to exchange a quantity of x for a specified quantity of y. The ratio of these quantities may be thought of as the rate of exchange or (relative) price of x for y. This, of course, is barter as practised by children when they exchange marbles for pencils (or whatever it is that they exchange these days!) or when countries exchange leather goods in return for military ware. It may, therefore, be concluded that satisfaction maximizing individuals will enter into exchange and exchange will establish prices. This basic principle applies even if there are more individuals and more goods and if one of the goods can be selected in terms of which relative prices can be converted into “prices”. According to theory that is how markets emerge, where there are many participants, many goods and some good in terms of which all prices are expressed.

[2] For a recent discussion of this theme see Stuart Birks, *Rethinking Economics: From Analysis to the Real World* (Springer, Singapore, 2014).

[3] Two economists I have found helpful in dealing with real life issues are Georgescu-Rogen and G.L.S. Shackle. On the procedure to analyse concrete life problems the former wrote: “Proudly accept the principle of practical opportunism with an appreciable dose of delicacy of touch…and arrive at a workable body of descriptive propositions for a given reality” in *Analytical Economics* (Harvard, Cambridge, 1966) pp. 110 & 112. Shackle added: "We have to strive for an insight which focuses informally and, if you like, non- logically a number of strands which in their formal aspects mutually repel each other" in *A Scheme of Economic Theory* (Cambridge, 1968) p. 2. I have frequently used the expression "analytical description" to deal with real life issues and it is this procedure that I use in Section II.

Now, take this example a step further. Consider a large number of participants divided into two groups, one group called "households" or consumers and the other as "firms" or producers. Households own all goods, mainly their services (referred to as "resources") which they hand over to firms and firms convert them into particular goods that the households want. A market thus emerges for a variety of goods, called "commodities" supplied by "producers" and demanded by "consumers". It may, therefore be concluded that if consumers are satisfaction maximisers and producers are "profit" maximisers, the market will establish uniform prices for each one of the many commodities. According to another, and more familiar and visual exposition, taking price on the vertical axis and quantity on the horizontal axis, the producer supplies the good (represented by the upward sloping "supply curve") and the consumer expresses his willingness to purchase via the downward sloping demand curve (because of "diminishing marginal utility") the consumer and the producer together determine the equilibrium price. With large numbers of consumers and producers, the "market" where they all compete becomes the arena where prices get determined. And since the whole exercise is meant to satisfy the consumer, the consumer is said to be sovereign.

This theory, with all its circumscribing conditions, gets converted into the propaganda: The market is the forum where producers make public their cost of production to serve the consumers and the consumers indicate their preferences, and so: "In the Market Economy the Consumer is King". This propaganda was required to lend support to a socio-economic order which was competing with another where an external agency called "the State" was alleged to be deciding what its members required and had its way of distributing it as it thought fit. In short: "Democracy vs Totalitarianism"[4]. In a different context where even within democracies an agency named "the State" is seen to be entering into economic decision making and action, the suitable propaganda becomes: "Leave it to the Market" (note the capital "m"). In both these cases, the propaganda is not initiated or sustained necessarily by those in the street or active in the market, but basically by internationally recognized and acclaimed academics who use philosophy, logic and high-brow mathematics to prove the point[5]. I shall return to these aspects in Section III.

Section II. The market economy: a reality check

Fortunately, the market is a familiar institution to most of us. Let me confess that I learned more about the market from life-long involvement with it, (including what I learned along with my Ph.D. students, all of whom dealt with some aspects of it) than from the class rooms and scholarly expositions in books and journals, although for long the two remained in two different segments of my brain! The early years of my childhood were spent in a small village in old Travancore, where I lived with my grand-parents and uncles (my father and mother being away in academic pursuits) in what was essentially a self-sufficient household. Most of the goods required were directly produced – paddy, a wide variety of vegetables and fruits, milk from cows owned. There was also a weaving shed that produced handloom clothing

[4] Those who are familiar with the debates of the 1930s on pricing will recall that the technical problem relating to the determination of relative prices was acknowledged to be to find solution to a set of simultaneous equations which a computer could solve. The practical issue was considered to be the appropriate institutional framework, decentralised decision making via the market ("democracy") or centralised decision making ('socialist state'). See Oscar Lange, *On the Economic Theory of Socialism* in F.M. Taylor *ed.*, *On the Economic Theory of Socialism* (Minnesota, Minneapolis, 1938).
[5] For a clear exposition of this theme see Geoffrey Harcourt, *Markets, Madness and a Middle Way*, Ideas for Australia, 1992-1993 Program (Clayton, 1992). I am grateful to Harcourt for drawing my attention to this publication.

required for daily life. My recollection is that the household had everything other than cash which was very scarce, indeed. And yet, it needed goods that it was not producing – such as salt, dried chillies and molasses. What was done to secure these was to take some of its own produce, a bunch of raw bananas or some eggs, to a location about a mile away on a Wednesday or Saturday and where on those days the required goods would be available. Seldom was there direct barter. The active or hyper-active participants of the market were a few people who would buy our goods for cash which we would then use to buy the goods we required. These agents were called “merchants”. In my mind, therefore, the market is associated with a place and merchants. Even in Tambaram where the Madras Christian College was located, there was a place identified as the market to which I made frequent visits. There one could not find merchants who were buying and selling, but rarely did one buy anything directly from a producer either. Goods were sold in shops, temporary or permanent, and those who sold were taken to be merchants. Thus, the transaction was between the shop-keeper, the “seller” and me, not the consumer, but the “customer” I continued to do “marketing” even after we moved to Adyar, buying my requirements from the many shops along Sardar Patel Road, from the fruit vendors who had their temporary sheds between Sardar Patel Road and what was then First Main Road (which has now merged with Sardar Patel Road) and from vegetable shops in different parts of Gandhinagar. Once again, the transaction was between a buyer (a customer) and a merchant (a seller). There was no bargaining, certainly not in the shops which had fixed prices. The fruit sellers used to offer you “bargains”, in the sense that they would offer you a lower price per unit if you were to buy a dozen or more (bananas, oranges etc.) and occasionally you would reciprocate the bargaining. Am I right in claiming that everyday marketing is even now of this kind?

There are (and not surprisingly) differences between “markets as we know” and “markets in theory”. One has been noticed already. In theory, the market is a transaction between the producer and the consumer; in real life, the two parties are, respectively, sellers and buyers or customers. But there is a more important difference. In real life, the seller is rarely a producer. He/she is both a buyer and a seller, that is, a **merchant**. *A striking feature of the standard theory of the market is that it leaves out this crucial agent*. I shall enter into a discussion of the theoretical legitimacy of this exclusion in the next Section. In this Section I shall concentrate on what the real life implications of markets are whose active agents are merchants. Before I do that, however, let me touch upon a matter of pedagogic interest. I mentioned above that merchants offer larger quantities at lower prices. It appears quite reasonable as well. In other words, the merchant as supplier is a “rational” participant in the system. But then what is the nature of the “supply curve”?[6] It will be seen to be *downward sloping*. With also a downward sloping demand curve the intersection between the two may not easily take place, and if it does it will pose problems! It is not surprising therefore, that theory decides to eliminate merchants and sticks to the position that the supplier is the producer! *Be that as it may, let us note that the critical difference between the market in theory and the market in real life is that*

[6] Whether this is a supply curve will be contested by those who hold that “supply” is related to production. I am taking the line that it is the merchant who supplies what I want and that her/his price per unit will be lower for larger quantities. In that sense quite literally there is a downward sloping supply curve or sales curve. Others may argue that the phenomenon of the 'downward sloping supply curve' can be explained in terms of the transaction cost of the seller. The critical issue is that in real life there is usually an intermediary between the producer and the consumer and that if this role of intermediation is recognized, then changes will come in one’s understanding and procedures of analysis. The following link may be helpful: https://unlearningeconomics.wordpress.com/2012/12/11/whichever-way-you-paint-it-the-supply-curve-is-flat. This link was brought to my notice by Ashwin, a graduate student in economics and I am thankful to him.

in the latter it is a mediated process, whereas the former completely sets aside the mediatory role.

Let us move on. If the role of merchants is unavoidable to understand real life markets, so is the role of money. Let us recall the distinction that Marx clearly makes between barter which he represented as C-C (C standing for commodity) and transaction involving the merchant, that is designated as M-C-M'. That is, from the merchant's point of view the market is the arena where he converts money, M, into more money, M'.[7] To understand markets in real life, therefore, it is important to recognize that different participants enter into it with very different motivations. Further, it must be noted too that Merchants, Money and Markets constitute a triad such that no one of the trio can be understood without the other two. Let me be more specific. *While the theorist has the right to abstract from what she/he considers not essential, and thus exercises the right to leave out merchants from an exposition of the market, no one whose interest is in understanding how markets actually function can afford that luxury*. Let us go a step further. The theorist may claim that any one of the many goods that enter into transactions can serve as a *numeraire* to convert relative prices into absolute prices. However, when an active participant in the market is there to make money, how can it be left out? Let us note too that in real life situations few transactions will take place unless there is a commonly accepted medium of exchange backed by some equally accepted authority.[8]

On the basis of their historical research into the triad in ancient times, Karl Polanyi and his associates have documented how the triad relationship emerged over time. Their case studies lead to the conclusion that the forms of trade, use of money and market elements (each one independently evolving) differ widely across social institutions, but except in a "market economy" there is no particular relationship among these three elements. Early merchants could have been pirates who only wanted to trade their loot for some local product. Markets could have been a space where producers gathered to exchange their goods with different goods that others had produced. Early forms of money could have been a way of making a payment, instead of being a medium of exchange. But in a market economy "trade is directed by prices, and prices are a function of the market, all trade is market trade, just as all money is exchange money. The market is the generating institution of which trade and money are functions. In brief, *… trade, money and market form an indivisible whole*".[9] John Hicks in his *A Theory of Economic History* also emphatically states that it was specialization in trade that marked the beginning of the Market Economy.[10]

That being the case let us look at markets as the field of activity of the merchants who use money as the instrument of their profession. The professional role of the merchant is as a link. The link certainly can be between the producer and consumer, but not necessarily so. It could be between a merchant and the consumer, between a merchant and another merchant and so on. Indeed, in this sense a modern market economy is a *chain* consisting of several *intermediaries* of all sizes and shapes – not a very neat chain, for sure! In other words,

[7] Karl Marx, *Capital* (Progress Publishers, Moscow, 1976) Vol. I, pp. 151 ff.
[8] This is not to deny that there are local communities in different parts of the world that have their own currencies for purposes of transaction of the goods their members produce and services they render. See Bernard Lietaer and Jacqui Dunne, *Rethinking Money: How New Currencies Turn Scarcity into Prosperity* (BK Publishers, San Francisco, 2013) especially "Local Exchange Trading System" (LET) in a community close to Vancouver, Canada.
[9] Karl Polanyi *et al*, *Trade and Markets in Early Empires* (The Free Press, New York, 1957) p. 257, emphasis added. The studies included in the volume go back to the 17th century BC.
[10] John Hicks, *A Theory of Economic History* (OUP, Oxford, 1969).

markets in real life constitute a rough and rugged terrain. It is this very nature of a market economy that theory abstracts from to generate a neat and smooth theory of exchange.

a. Merchants and their role: Let us start with the merchants that most of us know and deal with, let us say the vegetable vendor who brings her wares to us in a cart every morning. Why does she do what she is doing? The answer quite simply is that she is making a living. The vast majority of merchants in our country are of this kind. She goes to the wholesale market early morning, pays money (to be sure borrowed money, but let us leave that aside for the time being) collects the vegetables and then sells them to you. There may be some bargaining there, not initiated by her, but by you! To use Marx's formulation, her activity is of the M-C-M' type. The extra money she makes (⊗M) she uses to buy rice and dhal for her family. Consider a second merchant, the owner of the shop from which we buy our stationery and similar requirements. Prices are marked on every item; so there is no bargaining. But there is a difference between the prices he paid to the merchant from whom he bought the goods (wholesale prices) and the sale price, the difference being his margin. But, again, it is of the M-C-M' format. But the chances are that he uses his ⊗M to expand his business, to buy some shares or whatever, i.e., to make more money. Think of a third intermediary, a very different kind indeed, Walmart in the USA or Waitrose in UK who are also merchants of the M-C-M' type, but who have direct contact with producers (from different parts of the world too!). So merchants may have direct dealing with producers and may sell to final consumers (as the chain grocery stores do). Merchants need not be big business people or corporates to link original producers and final consumers, but in general merchants' activity is to buy and then sell. So a market economy is dominated by a chain of sellers and customers. It is possible that in economies that are considered to be "developed" where the labour force is largely in the tertiary sector, rather than in the primary or secondary sectors, most of those who consider themselves as workers are indeed merchants selling goods and services.

b. Markets and ownership: Let me turn to another aspect that has not received the attention it deserves. What the merchant sells is what s/he owns. In the case of the vegetable vendor it is obvious. She sells the vegetables she has bought. The vegetable she sells are hers as long as they are with her. And they become yours when you pay for them. The same is true of all who sell for the simple reason that only what is *owned* (not merely held) can be alienated. As Hicks puts it: "When he sells an article he must be able to assure the buyer that the thing is his to sell; he must be able to prove his property in it, if he is challenged".[11] If so the merchant can be thought of as one who specialises in transferring ownership, and the ⊗M that he makes may be considered as payment for this important service he renders. *It also means that the market must be thought of as a place of constant juggling of ownership, perpetually in motion, never in a state of equilibrium!* This is seen most clearly in the financial market to which we will soon be turning.

c. The merchant as a source of information: The merchant is not only in possession of goods, s/he also stores information s/he gathers. S/he certainly knows (makes an effort to know) what her/his customers are interested in (that that is why s/he stores them) but also of what s/he sells. That being the case, a market economy cannot be one where all buyers and sellers have the same information. The merchant as an intermediary will also have information about her/his clients that s/he can use for her/his own advantage. That

[11] John Hicks, *A Theory of Economic History* (OUP, Oxford, 1969) p. 34.

is, it cannot be assumed that information is symmetrical in a system where there are activities of buying and selling. *In other words, the market economy must be considered as one characterised by* **asymmetry of information**. I cannot but recall that Joseph Stiglitz, George Ackerlof and Michael Spence who were awarded the Nobel Prize in Economics a few years ago were recognised for showing that asymmetry of information must be taken seriously! Also, they have acknowledged that they received enlightenment by coming into contact with real life, Stiglitz in Kenya and Akerlof in India.

d. **Inter-locking markets:** A closely related aspect of real life markets is that merchants who are actively involved in them are responsible for inter-locking them. We can claim credit that this is a widely recognised theoretical contribution of Indian economists, Amit Bhaduri and the late Krishna Bharadwaj. It became a theoretical contribution because theory postulates that the act of selling and buying each good must be treated as a function of its own price and nothing else. But look at buying and selling from the point of view of the merchant. S/he is in competition with others in the market, and will succeed only to the extent that one way or the other s/he carves out a market of her/his own. *Tying up different markets is thus an important and intrinsic aspect of the market economy and it is achieved by dealing with and bringing together (tying up) a specific set of buyers and sellers s/he deals with and convincing them that s/he is offering each of them a special deal, but without any one of them knowing the details of her/his deals with others in the loop.* It will be seen that interlocking of markets is closely associated with asymmetry of information and is not confined to the rural agricultural sector.

e. **Expansion and segmentation of markets:** It is important to recognise that merchants are constantly striving to carve out markets of their own. There are different ways of achieving this objective. Your vegetable vendor may claim your street as her exclusive territory. Your shop keeper may "cultivate" you by offering to have your requirements delivered to your residence, or by allowing you to make payment for your purchases on a monthly basis instead of every time you buy something. Big intermediaries have their own brand names. The idea is to get a set of "attached" customers, thereby making a protected market, something that provides an element of monopoly power. Product differentiation, real or just visual, assisted by advertising plays an important role in this process. Real life markets, therefore, have features of competition and monopoly, resulting in monopolistic competition, rather than "free" competition. A major consequence of this process is that real life markets always tend to expand (resulting from the relatively easy entry of new merchants who create new markets) and get differentiated or segmented (resulting from each merchant's effort to establish a protected market). The built-in tendency of markets to expand has been recognised by writers, both of the past and more recent, Adam Smith, Karl Marx, Rosa Luxemburg, Karl Polanyi, Joan Robinson and John Hicks, for instance.[12] Segmentation of markets has received recognition only in the immediate past. But the two have seldom been seen as happening simultaneously resulting from the activities of merchants. A special kind of segmentation deserves some attention. It is a kind of natural segmentation based on the income (or purchasing power)

[12] There is a relatively new phenomenon of "disintermediation" of producers attempting to "throw out middlemen" and going directly to the consumers. The internet is the medium through which this is achieved with the producers going directly to the consumers. For details see the link, http://en.wikipedia.org/wiki/Disintermediation. I am grateful to Stuart Birks for bringing this link to my notice. It may be note, however, that big middlemen like Amazon may be using the same platform to weed out small middlemen.

of the customers. This is seen most prominently in the case of hotels, where the segmentation is officially recognised by the "star" status (five-star, four star…and no star), but is, indeed, very wide-spread, in the spheres of entertainment, transportation, medical care, and even education. We may recognise this as a vertical segmentation of markets.

f. **The key role of money:** Whatever may be the role that theory assigns to money in the exchange process, markets in real life cannot function without money. Paradoxical as it may sound, the most successful form of money for purposes of transaction is money that is intrinsically worthless. Compare some precious metal like gold used as money on the one hand and paper money on the other. The former can be used for other purposes, but the latter mainly for exchange. It may appear strange that what is worthless or has no value measures the value of everything else! However, that is something of a "money illusion". For, worthless money has a role and a very prominent role in economic and social life because it is backed by a powerful authority, the State (via its designated agency). Paper money is accepted for transactions because it carries the statement by the representative of the State: "I promise to pay the bearer the sum of…" In other words, paper money is based on authority and promise, and is thus an IOU, and the trust that users have in that authority and its ability to pay. Apparently those who ask the State to keep its visible hands off the market economy run by the Invisible Hand are just parroting some slogan that they have picked up somewhere. Let it be affirmed that markets in real life function because there is an authority backing them.

g. **Financial markets:** Let us now turn to one of the special real life markets, the financial market which these days has become "the Market". It deserves special attention for a variety of reasons. First and foremost, if what used to be referred to both in everyday conversation and in professional discourse as 'international' has now become 'global' it is because of the manner in which the financial market has moved into every part of the world and the exponential growth it has been making during the past few decades. What needs to be noted, however, is that the working of the financial markets brings out some of the essential features of real life markets so much so that John Hicks claimed that the financial markets are the places where the market system is at home. And why? First because the commodity that they deal with is claims to ownership (shares) where cost of production is low. Second, it is in the financial market that a major feature of markets as trading of ownership is clearly seen. And third, nowhere does the significance of the mediatory role of markets and of traders and the associated asymmetry of information become as evident as in the financial market. In that sense the financial market is where the nature of the real life market can be observed most clearly. Indeed finance is intermediation raised to the n^{th} degree.[13] Surprising as it may appear at first, the financial market does not function according to its own criteria; nor is it free from "external" interferences. Big Brother is always alert and intervenes when considered necessary via changes in the rate of interest which is the most effective price in the market for credit. Let us note too that the (global) financial market does not function solely on the basis of finance and its features. It involves legal agreements, both national and international, regulatory agencies and the like and makes its impact felt on the balance of payments of the countries concerned, on property rights and living conditions of ordinary people who may have nothing to do with finance, as shown by the recent experience of Greece.

[13] See my *Wealth and Illfare: An Expedition through Real Life Economics* (World Economics Association Books) Ch. Five.

h. Some larger issues: Without going into details I would like to flag a couple of issues relating to the financial market that deserve critical scrutiny. First, with credit playing the major role in the financial market, markets are now making significant inroads into the future which means that future participants will be confronted with *fait accompli*, thus reducing their own choices and decision making power. Second, using claims as proxy the financial market is dealing with wealth as such; it is concerned with transactions of ownership of wealth. The profit that the owner of wealth and her/his agent makes through the transaction is part of current income; over time whatever is saved of it becomes addition to wealth. As the activity of the financial sector increases in a country's economy it would, therefore, mean that income generation and wealth accumulation are increasingly through trade rather than through production. Some re-examination of our notions of capital formation and growth will be called for to take into account this reality. This change resulting from the spread and intensification of the financial market also has profound social consequences. If incomes are increasingly generated through financial transactions, those who are already wealthy are at an advantage; their incomes and wealth are likely to increase more than the average. If so, as more capital is formed and more growth takes place inequality will also increase. Is this happening globally and in our country?[14]

i. Production and trade: In concluding this section let me briefly touch upon the relationship between production and trade and more specifically the producer and the merchant. Historically production and trade were possibly independent activities, but with what may be described as large-scale (industrial) production, the two have been closely associated. Large-scale production, of course, is meant for the market. The producer, motivated by profit, realizes it only after the merchant (who is also motivated by profit) takes the product, finds the buyers and sells the product. The common pursuit of profit led to a mutuality of relationship. In the early stages with large-scale production the producer may have had the upper hand. However, traders also have ways of scaling up their activity (recall that the early joint-stock companies were those of traders) and so there has been a changing scenario. Shrewd merchants had ways of marketing in their name products made by small producers and thus capturing markets and growing big. We are now in a stage where the market is controlled by the big distributors, Walmart, Amazon and others globally, Reliance, Spencers and similar big names in our country. The multinational corporations (MNCs) combined production and trade, but the trend currently appears to be for producers, distributors, bankers et al to focus their activities on the finance sector in spite of the recently experienced problems and collapse in that segment. What counts today is being big and going global (that is what finance does) with the assurance that the Big will not be let down by the State – the Wall Street-Washington alliance or the Dalal Street-Delhi alliance!

[14] Amit Basole writes about the Indian experience: "… [I]nequalities steadily decreased in the planning period, driven by the fall in real incomes at the top of the distribution. This decline reversed itself in the 1980s. The 1990s saw an increasing divergence between the rich (top 1 per cent) and the rest of the country". ('Dynamics of Income Inequality in India, Insights from World Top Incomes Database', *Economic and Political Weekly*, October 4, 2014).

Section III. Theory, ideology (propaganda), reality

Having provided an account of the market in real life, I wish to return to theory asking the question why theory which is meant to be to enlighten reality turns out to be a distortion of reality, at least as far as markets are concerned. Let me repeat what I had stated earlier: I think I am right in saying that in the economics of the Anglo-American variety there is no theory of the market. Marshall's familiar Supply-Demand diagram and Walras's less familiar General Equilibrium Theory reworked in the middle of the twentieth century by Arrow-Debreu, Koopmans, Lionel McKenzie and others have entered into class room teaching, the former at the undergraduate level and simplified versions of the latter at the graduate level.[15] These are not theories of the market; they are at best *theories of prices*. The difference is crucial.

If a sweeping generalization may be made of the 118th century writers on political economy, hardly any of them claimed to be concerned with theory as such. They were trying to understand and interpret the economic reality that they saw around them. Adam Smith's writings on trade and markets must be seen against the mercantilists' restrictions on domestic trade. There was something of a long-standing theoretical discussion, the relationship between "use value" and "exchange value", which remained unresolved. This theme was taken up by the trio considered to be the initiators of Neo-Classical Economics, Jevons, Menger and Walras. In pursuit of their objective they turned to the physical sciences for a procedure to be adopted. In the Preface to his *The Theory of Political Economy* (1870) Jevons wrote: "All the physical sciences have their basis more or less obviously in the general principles of mechanics, so all branches and divisions of economic science must be pervaded by certain general principles. It is to the investigation of such principles – to the tracing out of the mechanics of self-interest and utility, that this essay has been devoted."[16]

Walras who had the same objective had started as a mining engineer and according to Schumpeter, couldn't make a living and so decided to apply his mathematics to political economy in which he had some interest.[17] His major work was on the use value/ exchange value nexus. And he did not hide the fact that his aim was to convert economics into a 'physico-mathematical science'. In his *Elements of Pure Economics*[18] he sets up a universe of discourse to demonstrate the interaction between sellers and buyers in economics. Some

[15] At the graduate level whether the General Equilibrium Theory is directly dealt with or not, because of the link it has with Modern Welfare Economics, Pareto Optimality, Duality Theorem etc., the concept as such is not unfamiliar. Much work has been done on the theory in the second half of the past century. For a review of the literature see Frank Ackerman, *Still Dead After All These Years: Interpreting the Failure of the General Equilibrium Theory* (G-DAE Working Paper No. 99-01, November 1999, Global Development and Environmental Institute - Working Paper No.00-01). Ackerman's conclusion is: "The mathematical failure of general equilibrium is such a shock to the established theory that it is hard for economists to absorb its impact", (http://ase.tufts.edu/gdae/publications/Working_Papers/stilldead.pdf, p.5). This reference was passed on to me by John Kurien and I am grateful to him. Though dead, the General Equilibrium Theory will be around because it is the most popular theory of pricing. See End Note for my past involvement with it.

[16] William Jevons, *The Theory of Political Economy* (Edited with an Introduction by R.D. Collison Black, Penguin, London, 1970).

[17] I am relying on Walras because he spells out his theoretical method fairly clearly which shows how restricted is the application of his theory to real life situations. Many overlook this crucial aspect of theory and pick up just the conclusions. This is one reason for theory becoming an ally of propaganda. See Note 17 also.

[18] Walras had spelt out the procedure he was adopting: "From real-type concepts, these sciences abstract ideal-type concepts which they define, and then on the basis of these definitions they construct a priori the whole framework of their theorems and poofs", *Elements of Pure Economics*, p. 71. In my *On Markets in Economic Theory and Policy*, R.C. Dutt Lectures, 1990 (Orient Longman, Calcutta) there is a more detailed account of Walras's method and conclusions.

“laws” of a general nature can also be seen as holding within this universe which, therefore, can be claimed to be “universal”. In the physical sciences such constructions are used as a prelude and aid to probe the real thing. This is what Walras claimed he was doing. His intention was to understand wealth, social wealth to be accurate, which for long had been recognised as the field of enquiry of economics. In Lesson 3 of *Elements* he first defined social wealth as “all things material and immaterial that are scarce”, that is to say, useful on the one hand and available in limited quantity on the other. Useful things, limited in quantity, are appropriable. Appropriable things are exchangeable. Useful things limited in quantity are assigned value by exchange, and social wealth is the sum value thus assigned to useful things limited in quantity through exchange. Thus, a universe of discourse consisting of the inter- related concepts of social wealth, utility, scarcity, appropriation and exchange is set up.

But this was only one of the universes that Walras dealt with. The other universes that he took note of were the universe of production, or industry where the multiplication of useful things limited in quantity takes place, and the universe of property which deals with the appropriation of such things. He warned against the tendency to study simultaneously social wealth from all these points of view and decided to concentrate on the universe of exchange which, according to him, had not received enough attention. To do this he would leave out (abstract from) the other two. Thus *there is no one to one correspondence between theoretical structures and real life situations* and those who fail to recognise this fact may use theoretical conclusions as basis for policy recommendations or for purposes of propaganda. This is the most charitable explanation that can be given for that wide-spread mental disorder.

A second explanation for the gap between theory and reality is that theorists may abstract too much from the reality in their attempt to interpret reality. Staying on with Walras and those who have followed him, we may ask how valid it is to convert all decision makers, even within the limited realm of economics, as those only interested in their own expected satisfaction and are indeed trying to maximise it. With reference to exchange, this procedure is frequently justified by invoking isolated passages from Adam Smith, partly because he is considered to be the founder of economics (not a true claim at all) and also because he is accepted as a philosopher who should, therefore, be acknowledged as an authority on human nature. Isolated passages from his writings are then quoted, such as:

> “It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest. We address ourselves not to their humanity but to their self-love, and never talk to them of our necessities but of their advantage”.[19]

That appears to be a very clear statement about self- love in the context of exchange. Those who invoke this passage, however, forget that it is preceded by another passage which reads:

> “In almost every other race of animals each individual, when it is grown up to maturity, is entirely independent, and in its natural state has occasion for the assistance of no other living creature. *But man has almost constant occasion for the help of his brethren, and it is in vain for him to expect it from their benevolence only*. He will be more likely to prevail if he can interest their self-

[19] *Wealth of Nations*, Vol. I, Ch. II.

> love in his favour, and show them that it is for their own advantage to do for him what he requires of them".[20]

Wicksteed, writing a century later gave a different, and almost opposite interpretation of the logic of exchange:

> "We get our own purposes through a network of exchanges in which we are doing the things others want done, in order that we may get others to do what we ourselves want done".[21]

Is exchange motivated by self-love or an expression on the mutuality of our relationship with fellow human beings? Much can be said on both sides, the more said the better!

One more point needs to be added, in defence of those who consciously seek "theoretical" explanations for problems they consider important. Their intention is not to link theory and real life. On the contrary, and as already mentioned above and more will be said about how Walras handled it, they jettison a lot that is considered to be "real" to concentrate on the problem they have chosen. It is this procedure that is referred to as *abstraction*. The role of theory to them is to throw light on *(enlighten)* what they have decided, after careful consideration, as important. Thus, if it is considered that the rational allocation of scarce resources is the central issue in the science of economics, then whatever is necessary to centre stage that has to be done. "**If this…, then that**" is the nature of the postulational method on which economic theorists, especially Neo-classical theorists have relied. Kenneth Arrow and Frank Hahn who made very significant contributions to general equilibrium theory had this to say:

> "The immediate 'common sense' answer to the question 'What will an economy motivated by individual greed and controlled by a very large number of different agents' look like is probably: There will be chaos. That quite a different answer has long claimed to be true and has indeed permeated the economic thinking of a large number of people who are in no way economists is itself sufficient ground for investigating it seriously".[22]

The problem that they wish to tackle has been clearly formulated, whatever conditions are required to find a solution have been specified, and an answer to it has been proposed. Questions may and should continue to be raised about the procedures of the theory and its implications. That is one of the ways in which science grows. The physical sciences then turn to the real world to see whether new theories are supported by facts; in economics the position appears to be that if a theory is not supported by facts it is because of some 'imperfection' in the real world!

Let me now turn specifically to the theory of exchange as expounded by Walras and followers to show that no explanation of markets can be deduced from it. The strategy used by Walras was to show that value in use and value in exchange coincide in barter. Two parties enter into barter because each perceives use value in what the other has to offer, conventionally

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[20] *ibid*, italics added.
[21] Wicksteed, *The Common Sense of Political Economy*, with an Introduction by Lionel Robbins (Routledge, London, 1935) p. 165.
[22] Kenneth Arrow and Frank H. Hahn, *General Competitive Analysis* (North-Holland, Amsterdam, 1970) p. vii.

referred to as “the double coincidence of wants”. There may or may not be bargaining in their transaction. And the quantities of the two goods that they agree upon for the transaction reflect an exchange (price) ratio. If several parties are involved, and all are bargaining for exchange transactions, then it follows that rates of exchange for all goods will be established. So runs the argument. Conditions apply, of course. When n number of participants with m number of goods bargain, no actual transaction can take place till everyone is satisfied with every rate of exchange. It may be that this condition will be satisfied via the Invisible Hand alone. So introduce an Auctioneer who does not bid, but has the power to cancel all bids so that the *tatonement (groping)* continues till (relative) exchange values of all goods are established and no participant has an incentive to bid – general equilibrium is established, that is. There is also the need to express the relative exchange values arrived at as price. No problem. Select a good, any one, and use it as *numeraire* in terms of which all relative ratios are expressed and you arrive at prices. I have, of course, oversimplified, but I think this is enough for our purpose.

What are the short-falls in the Walrasian exposition? Let me touch upon two that I consider significant. The first is that while the numeraire may succeed in establishing prices in general for the theorist, unless the good selected is generally acceptable, most participants may not accept exchange as a matter of everyday living. This is where the absence of money in the Walrasian general exchange system turns out to be a problem. True, in the past several goods have been used to facilitate exchange; but we know also that under such conditions exchange was an occasional activity, and few entered into it. In any real life situation participants will need money (even if it is an IOU) backed by an accepted authority to enter into trade. Walras's Auctioneer does not have such authority.

Second, and more important is that Walras goes too far in claiming that barter establishes any rate of exchange except as between the two goods, the two participants and for that specific occasion. On this issue Marx certainly has a more correct analysis. According to him each act of barter (C-C) is a process of use value changing places and hands, and is “extinguished” when that transaction between two commodities and two parties is over. In other words, through barter it is not possible to arrive at generalized transactions. Ronald Coase was right when he stated in his Nobel Prize Acceptance Speech in 1992 that such theories of exchange that dominate Neo-classical Economics are fit only for the analysis of “lone individuals exchanging nuts and berries on the edge of the forest”.[23] To generalise transactions it is necessary to have merchants and money; that is, the M-C-M format which, as we have already seen will naturally turn into the M-C-M' mode. Hence the claim that is made by Schumpeter and others that Walras was dealing with “multi-commodity barter” is not valid at all. In my view, “Multi-commodity Barter” is an oxymoron.

The truth of this claim is brought out by an analogy that Joan Robinson popularised based on an example that R.A. Radford had initially used.[24] They compared the Walrasian system to a prisoner- of war camp. The men are kept alive by official rations, but occasionally receive gift parcels from the Red Cross. The contents of the parcels are not tailored to the tastes of the individual recipients, so that it is possible for each one to gain by swapping what he wants less for what he wants more. The camp official takes the place of an Auctioneer and announces exchange ratios in terms of one of the goods picked from the parcels and lets the prisoners of war enter into exchange contracts. But the contracts are valid only if at the

[23] Quoted by Ha-Joon Chang in *Economics: The User's Guide* (Pelican, New York, 2014) p. 127.
[24] Joan Robinson, *Economic Heresies* (Macmillan, London, 1971) and R.A. Radford, “The Economic Organization of a P.O.W. Camp”, *Economica* (November, 1945)/

announced prices the amount offered of each good is equal to the demand for it. If not, the tentative contracts are cancelled and the game starts again and is played till the two conditions are simultaneously satisfied, viz, the announced prices lead to satisfactory contracts for all participants and at these prices in all markets quantities supplied and demanded are matched.

The comparison of the "free" market economy with a P.O.W. Camp experience may not be fair. But it brings out an important aspect, the initial endowment of the participants. Walras had recognized this and took the commodities that the participants bring to the market as their endowments. Any endowment beyond that (property, for instance) he considered to be extraneous to the exercise on the determination of prices. But some initial endowment sufficient for the survival of each of the participants was required for the model to become robust. Arrow and Debreu referred to it, but according to Koopmans did not find a satisfactory procedure. Koopmans himself dealt with it as the "survival problem" and conceded that "the hardest part in the specification of the model is to make sure that each consumer can both survive and participate in the market, without anticipating in the postulates what specific prices will prevail in an equilibrium". It may be noted that among the alternatives that he put forward was what he described as the "hard-boiled" one, "to assume instantaneous elimination by starvation of those whose resources prove insufficient for survival…" He certainly was not recommending it, and finally decided to concede that the model "would be found best suited for describing a society of self-sufficient farmers who do a little trading on the side".[25] If that is the case, then the model cannot claim to be applicable to all situations, although the claim usually made about it is that it has "universal" applicability.

An important implication of the initial endowment condition is that entry into the market is not "free"; there is something of a "*fee*", to enter the market, that is, you must have purchasing power if you want to be a player in the market economy. What signals the market is not so much the preferences of the consumers as such, but their differential ability to back their desires by their resource endowments. Look around and see the prolific increase in the sale of motor cars and luxury apartments after we turned to the "free market" in the early 1990s while the production of consumer goods required by the vast majority of the people, including basic needs like food and shelter, lag behind. Or reflect on the decisions that we make. We know, for instance, that we cannot afford food served in all hotels, or treatment given in all hospitals or training in all educational institutions. We avoid embarrassment by selecting markets where we can afford the fee (mentioned in **Section II E** as the segmentation of the market on the basis of levels of income). But we know of people who cannot afford to buy even the basic necessities of life. The situation is more pathetic for another section of our citizens, even our neighbours, who are desperately eager to sell the only saleable thing they possess, their labour power, but for which there is no "market". How can a theory that recognizes the critical role of resource endowments for the survival of the participants and ensures it via appropriate assumptions – "hard boiled" or "soft boiled" – claim to be "universal"? And how relevant is it to countries like ours where we know the survival conditions of the vast majority of the people? Those who champion the cause of the "free market" are either unaware of its distributional aspect or are callously indifferent to it. All that they need is the assurance that the "Invisible Hand" works miracles!

[25] For details see T.C. Koopmans, *Three Essays on The State of Economic Science* (McGraw-Hill, New York, 1957) pp. 59 to 63.

I started the Lecture referring to the propaganda about the free market where the Consumer is claimed to be King. *In reality the Consumer is* **not** *King,* **not** *Queen, but a mere pawn*.

Post script

I trust that an important query that arises from the Lecture is how we must introduce economics in the class room. There are two clear options. The first is the prevailing pattern, that is, via presentation of "theory" which most teachers have no experience of and students swallow because it is a condition for them to receive the degree. The second option is to guide the students through an expedition of real life economics. I have raised this question and tried to provide an answer favouring the latter option in my *Wealth and Illfare*, (as cited in Note 12) and in my paper "Abstract and Substantive Reasoning in Economics" in World Economic Association's Newsletter, Vol.4, Issue 6, December 2014 (http://www.worldeconomicsassociation.org/files/Issue4-6.pdf).

My claim is that in terms of ownership, intermediation, authority and asymmetry of information, and relying on substantive reasoning it will be possible to probe into the working of real life economies. However, it calls for a conviction and agreement on what economics is all about. A moment of reflection will show that we usually start with an unexamined assertion that economics is about the use of scarce resources and its optimal allocation. Is that really so? Or should economics be considered as part of the study of the society in which we live, more specifically as the study of arrangements that human communities make to ensure their material requirements and progress? That will make the subject a much broader enquiry – into history, politics and many more aspects of social realty – in which management of resources will have a legitimate place. Wasn't that the procedure adopted by the "Classical" writers on the subject? I hope those who are engaged in teaching of economics and research in economics will seriously consider this matter. If there are comments, they may be passed on to me: ctkurien@gmail.com.

Acknowledgements

Professors Geoffrey Harcourt, M.V. Nadkarni, G. Omkarnath, Stuart Birks, K.L. Krishna and R. Radhakrishna have gone through earlier versions of this paper and made very helpful comments. Over the years I have learned much about the working of real life markets from my brother, John Kurien, who after studying business management in the 1970s helped fishermen to organize fish marketing co-operatives. While I am deeply indebted to all of them for their comments and guidance, I am solely responsible for the paper.

End Note

I may give a brief account of my own involvement with the General Equilibrium Theory which included exchanges with Kenneth Arrow, my teacher at Stanford University and discussions with T.C. Koopmans at Yale University where I was a Visiting Fellow in 1968-69. The background was my doctoral dissertation (1962) which was essentially on the much discussed topic of those days, "surplus labour" in "overpopulated underdeveloped economies" such as India. While most writers, including Arthur Lewis were concerned with showing how an economy with "unlimited supply of labour" would grow, my eagerness was to understand what surplus labour meant. I knew that technically it was a case of "excess supply "of labour and Linear Programming models relying on General Equilibrium Theory had shown that goods in excess supply would have zero price in equilibrium. Three noted economists had gone to the extent of saying that such goods would exist like "sand in the Sahara" (R. Dorfman, P.A. Samuelson and R.M. Solow (*Linear Programming and Economic Analysis*, Mc-Graw Hill, New York, 1958) Ch. 13. I could not accept that surplus labour would exist like that. I argued that the manifestation of surplus labour was the tendency for the inseparable use of labour and non-labour resources (land, capital) because the joint returns would be more than the sum of the separate returns to labour itself and the non-labour factors. I argued too that consequently various forms of self-employment, even when they could be shown to be technologically "inefficient" would be prevalent where the equilibrium price of labour tended to be zero. The dissertation was titled: "Factor Market Structure and Technological Characteristics of an Underdeveloped Economy – An Indian Case Study".

After I got back to India, my main academic concern was to give a formal statement of my argument. I made use of what had come to be known as "The Walras – Cassel General Equilibrium Model" and presented a paper with the title "Some Problems of Factor Allocations in an Underdeveloped Economy" at a UGC sponsored Seminar in 1964. I shared the paper with Arrow and he responded enthusiastically saying: "I think you have put up a most interesting discussion in elucidating, with the aid of modern resource allocation theory, the nature of the dual economy". However, he felt that an additional assumption of a minimum (subsistence) wage rate was necessary to complete the argument. I insisted that if it was accepted that surplus labour would resort to ways of survival, the model would not reach equilibrium. After a few exchanges, Arrow finally conceded the point and said:

> "I have puzzled for a long time on the question of the dual economy and I do not know that any theoretical coherent explanation exists. That does not mean of course that we cannot simply assume some imperfection in the competition and try to examine its consequences as you did in your dissertation and has been done by Lewis and earlier by Rosenstein-Rodan".

I was not sure that imperfection of competition and a dual economy were the real issues. In the Father Carty Endowment Lectures of the Madras University in 1965 I re-examined the problem, retaining all the competitive assumptions of General Equilibrium Analysis, but introducing the "survival" condition of labour. That resulted in a broader framework representing the Indian Economy of which the perfectly competitive model (of the Arrow-Debreu, Koopmans kind) and the Arthur Lewis "Dual Economy" were shown to be special cases. These Lectures, further revised, later appeared as my *A Theoretical Approach to the Indian Economy* (Asia Publishing House, Bombay, 1970). It was the typed version of this publication that I shared with Koopmans. He not only validated my approach and conclusion, but encouraged me to do further work on the topic. But my interest and commitment were not to theory as such, but rather to the survival problem of millions of our fellow citizens. Consequently, I turned to searching for a clearer understanding of the problem of mass poverty and the conditions of living of the millions in our land. Those who wish to have a more detailed account of my intellectual journey may look up my *Rethinking Economics*, (Sage, New Delhi, 1996) Ch.2.

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SUGGESTED CITATION: C. T. Kurien, "The market economy: theory, ideology and reality", *real-world economics review*, issue no. 71, 28 May 2015, pp. 75-91, http://www.paecon.net/PAEReview/issue71/Kurien71.pdf

Explaining money creation by commercial banks: Five analogies for public education

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Abstract
Educators and economists concerned with monetary reform face the extraordinary challenge of explaining to the public and its elected representatives *not only* what a reformed system would look like, but also how the current system works. Centrally, the point that in a modern economy money is largely created by commercial banks, as explained by the Bank of England recently (McLeay, Radia & Thomas, 2014b), is often met with incredulity: "What do you mean, created?" This paper introduces five easy-to-grasp analogies that educators and reformers may use to convey key money-creation concepts to a lay audience. The analogies offered include (1) money as patches in an expandable patchwork quilt that covers a nation's real assets, (2) the money supply as water in a bathtub with a faucet and a drain, (3) money understood as debt in a model economy run by schoolchildren, (4) the misleading concept of a bank "loan" explained by reference to gold that a London goldsmith *could have lent*, and (5) the money-creating capacity of bankers' clearing systems illustrated by the example of neighbors working for each other without money.

Introduction: money creation defies popular comprehension

Where does money come from? Most laypeople likely believe that a nation's money is issued by its central bank, while economics students are taught the credit-multiplier model, or the principles of fractional-reserve banking, which cast banks in the role of intermediators providing loanable funds. Commercial banks are believed to lend savers' deposits to investors, keeping only a fraction in reserves each time the money is re-lent, thus expanding the money supply.

What actually happens in a modern banking system is quite different, as pointed out by academic critics (Huber, 2014; Keen, 2014; Benes & Kumhof, 2012; Werner, 2005, 2014a, b; Bjerg, 2014), central bank governors (King, 2012, p. 3; Jensen, in Danmarks Nationalbank, 2014, p. 1), one top government regulator (Turner, 2013, p. 3), central bank economists (McLeay, Radia & Thomas, 2014a, b; Keister & McAndrews, 2009, pp. 7-8; Deutsche Bundesbank, 2012, p. 76; Bang-Andersen, Risbjerg & Spange, 2014; Sveriges Riksbank, 2013, pp. 74-77), informed members of the press (Wolf, 2014; Häring, 2013), and advocates of monetary reform (Ryan-Collins et al., 2011: Jackson & Dyson, 2012; Huber & Robertson, 2000).

The alternative view advanced by these critics (and recently referred to as "New Currency Theory" in these pages by Huber, 2014) starts from the fact that in modern economies, the central bank issues only cash, while some 95% of the money supply is bank account money. Most of this account money is created by commercial banks when they extend loans to their customers, loans being, in essence, *additions* to the money supply, not a mere reshuffling of extant money, as the intermediation model has it. Likewise, repaying bank loans with account

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money amounts to extinguishing money, since money spent on loan repayments disappears from the borrower's bank account and thus gets subtracted from the national money supply. That ordinary lending by commercial banks constitutes money creation is a key element in the explanation of the bubbles that plague modern economies (Galbraith, 1975; Minsky, 1978; Kindleberger & Aliber, 2011; Werner, 2005), disrupting the lives of millions of wage earners and home owners. As such, money creation-through-bank-lending is an insight that deserves to be widely appreciated, not only by economists and finance and banking professionals, but also by the general public.

It is a commonplace that the technical jargon of economics, finance and banking is a barrier to public understanding. In the case of money creation by commercial banks the challenge, however, is exacerbated, because this process flies in the face of many things we "know" about money, whether we are laypersons or economists. The alternative explanation draws on the dynamics of evanescent account-money, not just tangible cash or commodity money and, thus, is unfamiliar and counterintuitive. How do we explain that commercial banks create account money on their books when a layperson has no clue that money can be created at all, or that there is a finite money supply that expands, contracts and is replenished? Educators and communicators facing student or lay audiences, whether through oral or written presentation, need intellectual tools so simple that they can address the challenge of explanation head on.

Analogies as tools for understanding

This article offers such tools, in the form of five analogies or stories that are easy to grasp, yet preserve the underlying structure of the concepts and processes illuminated. They are presented here in terms congenial to the lay mind (that is, in terms of people with real names doing almost-real things), yet in so compact a manner that when the expert reader of this journal retells them to a lay audience he or she may occasionally need to expand the story and will know how to do so.

In the first analogy, we clarify the nature of money by seeing it as tokens representing real assets. This idea is explained by reference to the neutral veil which, according to orthodox economics, covers the real economy. In the positive reformulation offered here, the veil is a patchwork quilt and each patch or square a money token, the veil covering a country's real assets. When more tokens are produced and inserted into the veil, it inflates into a bubble and eventually explodes, producing a crisis.

The second analogy addresses a common barrier to public understanding: the concept of a money supply; the fact that a nation's money constitutes a finite and countable sum, which can be added to and subtracted from, by creating and retiring money, respectively. The analogy of water in a bathtub (as well as that of a population) serves to illustrate those points. Our third analogy lies in the type of model economy that is enacted by students in a school who play workers and business owners for a week. The "school business week" allows us to distinguish two possible sources of a nation's money: it can be supplied by private banks as loans and thus based on debt which, when repaid, shrinks the money supply and hampers economic activity. Or it can be supplied debt-free by the sovereign (that is, a government agency) and retracted, to prevent inflation, through taxation.

Next, the story of the London goldsmiths in the late 1600s is more history that analogy. It illustrates some fine points about the loan process that may otherwise confound the lay mind.

Wealthy citizens came to the goldsmiths to borrow gold but were persuaded to accept a deposit receipt instead, as receipts were already circulating as money. The borrower's promise to repay this loan illustrates the origin of the loan contract, which banks today enter as an asset, enabling it to create money on its books by simply lengthening the balance sheet, a shrewd sleight of hand when invented and, today, still not well understood.

Over several centuries, merchants and bankers evolved a system that allows them to match payments moving in opposite directions and thus to "clear" them without the use of much money. Our fifth and last analogy is about two neighbors who do jobs for each other and cancel their mutual claims. In like fashion, banks today participate in the largely money-free functioning of the national payment system and claim they lend money to their customers when, in fact, they merely use the payment system to effect payments for the customer. For this process very little money is required, meaning that the money lent is created pretty much *ab nihilo* by commercial banks.

We conclude by highlighting how, together, these five analogies can help us explain to the layperson key concepts underlying money creation by banks and the prospects of monetary reform.

Commercial banks create money on their books

Before we launch the analogies, let us state the alternative explanation they serve to illustrate (see the introductions by Jackson & Dyson, 2013; Ryan-Collins et al., 2011). In doing this, I shall follow Furey (2013) and skip the conventional explanations (credit multiplier, fractional reserve, banks as intermediators) and invite the reader to do likewise when using the analogies for public education, so as to avoid imparting wrong ideas and setting up mental barriers that have to be overcome minutes later. *Sans comparison*, when explaining to a child how the solar system is organized, who would start by offering the geocentric model?

The modern view of money creation is set forth authoritatively in recent publications from the Bank of England (McLeay, Radia & Thomas, 2014a, b). Following the lead established by the previous governor of the Bank of England (King, 2012, p. 3), the authors point out that only currency (cash = coins and notes) is created by the Bank of England (2014a, s. 10). The rest of the money supply, in the UK about 97%, is account money, which originates in banks:

> Commercial banks create money, in the form of bank deposits, by making new loans. When a bank makes a loan, for example to someone taking out a mortgage to buy a house, it does not typically do so by giving them thousands of pounds worth of banknotes. Instead, it credits their bank account with a bank deposit of the size of the mortgage. *At that moment, new money is created* …. This description of money creation contrasts with the notion that banks can only lend out pre-existing money…. Bank deposits are simply a record of how much the bank itself owes its customers. So they are a *liability* of the bank, not an *asset* that could be lent out (emphases in original) (McLeay, Radia & Thomas, 2014b, p. 16).

In simpler terms, from the same authors:

> When a bank makes a loan to one of its customers it simply credits the customer's account with a higher deposit balance. At that instant, new money is created. Banks can create new money because bank deposits are just IOUs of the bank…. When the bank makes a loan, the borrower has also created an IOU of their own to the bank [the loan contract. IR]…. The bank's IOU (the deposit) is widely accepted as a medium of exchange—it is money (McLeay, Radia & Thomas, 2014a, p. 11).

> Money today is a form of debt, but a special kind of debt that is accepted as the medium of exchange in the economy (McLeay, Radia & Thomas, 2014a, p. 12).

These are succinct statements of the modern view of money, but they are not easy to understand. Just appreciating that money is a means of payment of no intrinsic value is a challenge to laypeople—and specialists need reminding, too, as Jakab and Kumhoff do in a recent, highly technical paper: "While money is essential to facilitating purchases and sales of real resources outside the banking system, it is not itself a physical resource, and can be created at near zero cost" (2014, p. 5). Money as a medium of exchange, created at near zero cost by banks, as a form of debt? Educators and communicators have their work cut out for them. Below, we shall exemplify the ease with which money can be created by the London goldsmiths' use of fake deposit slips.

These issues are not merely banking technicalities; they are highly relevant to the economy at large. Against the orthodox economist's neglect of money, debt, loans and banking, Huber argues:

> Money governs finance, as finance governs the economy. In a modern, highly financialised economy based on credit, money is not just a 'veil' on economic transactions as neoclassical theory has it, but is constitutive of the entire economy, not only enabling transactions, but also financing, and ever more often forerunningly pre-financing, investment and consumption. Money issuance has a pre-allocative and pre-distributive function (2014, p. 42).

In other words, the question of who creates money and how is of major importance to social and economic equality (Jackson & Dyson, 2012). Helping lay people appreciate this point is of democratic concern, and we attempt to bring it home below, using the example of school children cutting out paper money for a model economy.

Unlike the goldsmiths' deposit slips and school children's paper money, the money created by banks is account money, and understanding its mode of operation is a separate challenge. In particular, banks' newly created account money start circulating in the economy as payments, entering the payment system that banks in modern economies operate. As payments, the loans are cleared or cancelled against matching amounts every night, as the system tallies up the millions of payments made by households and companies during the previous business day. Well under the public's radar, this clearing system enables banks to double and triple a country's money supply in a matter of years, thus contributing to bubbles, their popping and the consequent crises. Crucially, the way that loans are superimposed on the payment system is the key to understanding the freezing of the interbank system that so terrifies politicians that they bail out large banks too big to fail. Additionally, this point allows us to briefly discuss an alternative system in which lending and payments belong in separate compartments, and money creation is a privilege reserved for the sovereign, the people's democratically elected representatives, rather than the banks.

1. The expandable veil

As is well known, neoclassical economics treats money as a "neutral veil" that conceals or lies over real assets, which may be exchanged for money in largely uninteresting ways (e.g., Schumpeter, 1954, p. 277; see also Patinkin & Steiger, 1989). Money and its dynamics can be largely ignored; hence, the roles played by banks, the financial sector in general and money creation in particular are poorly understood by the orthodox economist and the layperson.

I wish to flip this somewhat negative metaphor and turn it into a useful analogy for money. If the veil represents money, we can see it as a blanket or patchwork quilt resting on top of the real assets of the world, such that one small patch or square of veil covers one asset: one plot of land, one home, one small shop, one person's work year, one pile of consumer goods. We can take the squares to be tokens representing the assets, and they may be traded in their place. They are our monetary units, like $100,000 bills. Crucially, they are worth nothing in themselves: only in their capacity as a claim on a resource do they become valuable. Today, these tokens include coins made of base metals, paper notes/bills, checks, the digits in bank accounts, and some securities (like government bonds).

Assume that we have a country of so many assets (say, a hundred) that a hundred squares are *just* sufficient to keep its economy running. The veil of 100 squares fits snugly over the area of the assets. Adding a bit of credit, in the form of five extra squares, will help the economy, as businesses will be better able to purchase raw materials and pay labor before they sell their goods, this being the quintessential function of credit (which needs to be explained to students or public sector-employees unfamiliar with the fact that credit is required for starting and expanding a business, as well as innovating new products and services).

We can imagine that when the tight veil covering the assets is expanded by five squares it will hover a bit over the country, as if some extra air is let in under the veil. The economy is lifting off, and with 10 or 30 additional squares it may be flying, the veil billowing in the winds of change. The money supply is expanding, from 105 to 115 to 135 squares, but as long as new assets are being produced and engaged – new homes, more consumer goods, unemployed citizens' work years – they keep pace with the growing number of squares. The economy is picking up speed, expanding the area of assets, tightening the veil somewhat again.

If, however, squares are being produced (or credit extended = money created), *in excess of* new assets, inflation ensues. If 150 squares are available, but there are still only 100 assets, each asset will now correspond to (cost) 1.5 squares, which amounts to inflation. This happens particularly when credit is extended for non-productive purposes, like speculation in existing assets (e.g., real estate and stocks) rather than the production of new assets, like goods and services (Werner, 2005).

If the agency that issues the money has the nation's interest at heart (as, supposedly, a central bank does), it will slow money creation to help keep prices more stable and allow asset production to catch up, and it may try to redirect credit towards productive purposes, rather than speculative ends. If, on the other hand, private interests, like commercial banks, enjoy the privilege of issuing the country's money, e.g., in the form of lending, and do so in pursuit of their own profits, they have no incentive to be prudent. Each bank, in fierce competition with other banks that threaten their market share, will keep adding squares (new money, loans, credit lines) and eventually inflate the veil into a regular bubble (Minsky, 1978). The creation of just the right amount of money, whether by commercial banks or the central bank, has been a major motif in the development of modern economies, as narrated by, e.g., Kindleberger & Aliber (2011).

The financial bubble is now being fuelled by commercial banks slackening their credit standards to lure new (and riskier) borrowers. At some point the loans start defaulting, bank equity is wiped out, liquidity freezes up and the whole nine yards. The veil explodes, spewing money squares into the air, whence they came. The veil deflates, quickly settling on the country, in tatters, insufficiently covering the assets, because banks have called in loans, businesses don't ask for credit since consumer demand is down, etc., etc.

The economy languishes for a number of years, until a seed of optimism takes hold somewhere and the cycle starts again, eventually producing a new bubble. It may happen in a new market that has gone unnoticed by regulators, where banks can create money or money substitutes that authorities only recognize as such too late to prevent the veil of money squares from yet again blowing up (in both senses of the word).

The regulators' aim is to keep the veil extended just right, so it won't suffocate the assets and the economic activity underneath, but hover right above them and facilitate production and trade. Galbraith's terse history of money (1975, chapters 2-4) turns precisely on the challenge facing every nation's monetary authorities to keep the veil suitably expanded, neither overshooting nor suffocating. The judgment required to do so is everywhere clouded by the desire of private parties, usually banks, to make money (in the form of interest) for themselves out of money created for others through lending (the identity of lending and money creation being further explained in analogy 4).

The expandable veil of money-squares covering a nation's assets is a tangible image for the nation's money supply. Traditionally, the immensely difficult task of regulating it to suit production and trade has been assumed to belong to the central bank. As is well known, central banks have largely given up on this task (Huber, 2015) and left it to commercial banks, resulting in the boom-bust roller-coaster.

Reconfigured as indicated, the veil metaphor no longer indicates the supposed irrelevance of money, but its significance in facilitating business transactions when supplied in just the right amount. This proper amount is visualized as the veil hovering over the land in the pleasant breeze of economic dynamism, an image easily held in the mind.

2. The money supply as water in a bathtub

To grasp the idea that money is being created at all, whether by private banks or a central bank, a layperson will find it useful to be conversant with the concept of a finite money stock that is replenished continuously. Few people have any direct experience of limits to the *general* availability of cash or bank account money. If told that her country's money supply currently stands at so many billion currency units, the person in the street will likely wonder: "How do they count that?" Offering the M1 explanation of cash plus deposits usually does the trick, especially if we remember to mention that the central bank keeps track of how much cash is issued and withdrawn, and that commercial banks tally up everyone's accounts every month and report their total to the central bank, which adds up the totals from all the banks.

The replenishability of the money supply can be illustrated by the bathtub analogy. The water level is the current money supply, the water faucet adds money and the drain subtracts, and the relative velocities of each determine the expansion and the contraction of the money supply. (Notice that in English, the term "money supply" already implies the dynamics of money being supplied, whereas other languages use more static terms. Thus, French: *masse monétaire*, German: *Geldvolumen*, Russian: *denezhnaya massa*, Swedish: *penningmängden*. This may be confusing or illuminating and must be borne in mind by the expositor.)

A simplified, three-step, historical perspective may be added:

When a country's money was silver coins, the Royal Mint created money, and very tangibly so. Minting was the water faucet, and clipping and smelting by the public were drains.

When, in the 16-1800's, banks extended loans by printing their own bank notes (famously the deposit receipts issued by the goldsmith bankers, cf. analogy 4 below), this became the faucet. Repaying the loans required collecting enough of these bank notes and giving them to the bank. Since the banks then did not eliminate the bank notes, that is, pour the money down the drain, as prudence would require, more and more notes came into existence, causing inflation. Finally, governments took away from banks the power to create paper money (in the UK, with the Bank Charter Act 1844).

However, the commercial banks' practice of creating money effortlessly continued by way of lending account money by book entry (as already described). It took a while for economists and governments to recognize this as real money, but in the course of the 1900's bank account money was included in the calculation of the money supply in modern economies. Just as borrowers repaid lent bank notes by returning them, loans by book entry were repaid by reducing the balance on one's account, either through bank transfers or by cash. This, then, constitutes the drain to the money supply (complementing the faucet: the banker's money creation by book entry).

Skipping this historical narrative, one may simply explain that while most of us think the central bank creates a nation's money, the expanded use of bank accounts over the past century, including the modern payment and clearing systems, has meant that commercial banks, where about 95% of the money in a modern economy resides, are in control of a nation's money supply. The faucet is not in the central bank, but is turned on whenever a bank extends a loan, and money is drained away when the loan is repaid.

Continuing the plain talk, we may explain that when times are good, banks like to lend – this is how they earn their money, through the interest paid – and this increases the money supply: the faucet sends more water into the bathtub than is taken out through repayment of the previous years' loans. Vice versa, when times are bad, as in the current post-2008 crisis, more loans are being paid off by households and companies than are being replaced by new loans, which banks are weary of extending anyway, for fear of taking further losses. More money is extinguished (destroyed, retired) from the money supply than is being created, and the water level in the bathtub drops, contracting the money supply and hampering production and trade.

A related analogy is that of a population. A young child has no concept of a population; there are just people in the street everywhere, in seemingly endless supply (just like most people think of money). But adults know that a population is the people in a nation counted at a particular moment in time. The faucet is births and immigration, and the drain is deaths and emigration; one may exceed the other, causing population growth or decline. The details of "people creation" (sex) weren't well-known amongst girls in convent schools a hundred years ago, just as, today, the details of money creation aren't well known to the layperson equally innocent in matters of financial procreation.

3. Money is debt in the school business week

Let's see if we can help a layperson get a feel for the role that money, considered as a system, plays in an entire economy. The model to be presented is especially useful for illustrating the dynamics of two different monetary systems in which money is created either by a central bank or by commercial banks.

Imagine a small country school with a hundred students. Once a year they run a "school business week" to help students understand the world of business and work. Classes are suspended and the children work for wages in five different businesses, such as a cafeteria, a grocery store and a woodshop. They change jobs occasionally and spend their wages buying the products of each business, such as lunch, sweets and wooden swords.

Money is needed for production and trade. A couple of students and a teacher form a money committee and cut out some pieces of paper in the total amount of 5500 money units. They distribute them, 5 units for each student and 1000 for each business.

Monday comes and the students start working, 20 students in each business, at 5 units an hour. Every few hours they take a break and spend some of their money on products from the five businesses. The amount of money in the system proves just about right for production and consumption, and the little economy is humming.

After a few days, the school is visited by 20 students from abroad, and they are invited to join the work week. A metal shop is opened, and it soon attracts 20 workers. But there is a dearth of paper slips to facilitate the new production and labor, so the money committee cuts out some more pieces of paper, 1100 units' worth. The metal shop receives 1000 units and each visiting student 5 units. Soon the expansion in the money supply is absorbed by the new production and consumption, and prices remain stable. A twenty percent increase in the money supply did not lead to inflation because production expanded.

At this point in our storytelling we may join our listeners, the laypersons, in their appreciation of our model economy. "That's so nice," they may say, "isn't this exactly how our monetary system is working?"

Well, no. To see how, let's look at another model economy. In the next small town, the local school is about to start *their* business week, for the first time ever. One of the older students, J.P., tells the teachers he has a very old game of Monopoly with some pretty banknotes. Would the school like to use them? Sure, say the teachers, how can we organize that? Well, since the notes are so fragile, he'll only *lend* them to the businesses and students. He'd really like them back after a few days, just to make sure they don't disappear. Also, to compensate him for the risk that they get dirty or lost, he'd like to have 1100 Monopoly dollars back for every 1000 he lends a business for ten days, to be paid in installments of 110 dollars a day, starting Monday evening. The teachers are puzzled by his terms and don't quite understand their ramifications, but they go along.

The first Monday passes as nicely as in the former school; the economy is up and running. At the close of business, J.P. collects 110 dollars from each of the five businesses, a total of 550. This is a 10% reduction in the money supply, which started at 5500. Tuesday morning the businesses have the same labor force, but at the end of the day, they are running a little short on dollars to pay their workers. They have to dismiss some of them for the last working hour, and workers worry that maybe they shouldn't spend their money as quickly tomorrow. Tuesday night the money supply contracts again, as new installments are paid to J.P.

The teachers suddenly realize that all the money in their economy came about as debts to J.P., and that repayments reduce the money supply and contract the economy. To lubricate the wheels of commerce, students and/or businesses have to borrow from J.P. anew, as he is their only source of money, the special Monopoly dollars they have now come to think of as money *per se*. Debt is the essence of their money system, and they can never get completely out of debt. Without debt there can be no money – as the system is set up now, with J.P. supplying all the money.

At this point in our story, our layperson realizes that the first economy, with its intuitively sensible and stable money system, is a pipe dream. Real economies are rather like the second model, with money supplied by people like J.P., or multiple agents like him, whom we now recognize as banks, which lend the community money that actually belongs to the banks. The means-of-payment that businesses need to pay wages and which people need to buy goods can only come from one source, the banks. Since modern economies typically rely on banks for some 95% of their money creation, we may say that a modern economy is a mixture of 5% of the first model and 95% of the second.

Here are some additional points that the business school week analogy allows the educator to make:

Being an entrepreneur is tough because the start-up money required has to be borrowed from J.P. at interest and maybe repaid before the company has established itself properly. This may explain why so many new businesses fail. Compare with the metal shop that is given 1000 dollars by the money committee to start production and provide employment for 20 idle workers. This may look like Keynes, but notice that the government does not borrow the money; it creates it.

If the money committee were a government agency under parliamentary control, it might decide to revoke J.P.'s money-lending privilege and instead supply its own paper money for the community on more favorable terms.

Whether the money is pretty or not is of no consequence. It is just a means of payment, to oil the wheels. Cut-out paper will serve as well. Money has no intrinsic value. What does is labor, resources, real estate, goods, etc. This difference may be used to distinguish between the finance sector and the real economy and their relative status today.

J.P. is likely to lend only to creditworthy borrowers (often those who possess collateral, like real estate and stocks), especially during a recession. This impedes recovery but inflates speculative bubbles in those separate markets. In contrast, the money committee may decide to distribute money somewhat evenly in the community to encourage spending, as recently proposed by Blyth & Lonergan (2014) in Foreign Affairs magazine (hardly a socialist outlet).

We may introduce several more banks to study the effects of their competition for sound borrowers, as well as their collaboration in a payment system (see analogy 5, below). In particular, we may replace the paper money with account money, requiring all workers and business to open bank accounts. Money lent by the banks is no longer physical Monopoly money, but the stuff that bankers' dreams are made of: numbers entered in books or computer software. This money is much more readily created by banks and, when inserted into the payment system, its origin in the banker's creative act is obscured, leaving the uninitiated with the obsolete belief that banks actually collect money from savers and lend it to borrowers.

One school (nation) may feature a central bank (money committee) and several commercial banks, the interactions between which may be simulated. The power of a nation to create sovereign money for itself has already been demonstrated (in the first school, above), and the lay person now recognizes that somehow, that power has been passed on to commercial banks. This prompts the question: When a government's spending exceeds taxation, it issues bonds to raise money, but why should a government allow banks to create money and then borrow it back from them at interest, compounding government indebtedness, when it could create its own money directly, free of debt? (Hixson, 2005).

4. Goldsmiths' deposit slips as money

We are now ready to confront some major barriers to understanding how banks create money through lending. These are the facts involved in the mechanics of bank loans, which include several puzzles: When extending a loan to a customer, how can a bank simply write the amount into the borrower's account? How is it that this money is not transferred from another customer's account or found in a drawer somewhere, like we would expect from a proper money lender? Sure, the borrower signs a loan contract, but how can this promise to repay the bank *in the future* constitute the basis upon which a bank may create new money *now*? And, more technically, how did it come about, historically, that the amount written in the loan contract, essentially just a signed piece of paper, can enter the assets side of the bank's ledger, allowing the bank to create the new money on its liability side, by extending its balance sheet?

These questions may be answered by reference to an important episode in the history of banking, in the middle and end of the 17th century, when London goldsmiths turned into bankers (Davies, 2002; Werner, 2005, p. 167-172; Ravn, 2014). We can reconstruct the reasoning behind their financial innovation and, while not strictly analogy, but plain history, it will serve as our fourth explanatory vehicle.

Goldsmiths lent fake deposit receipts

In the mid-1600's, many wealthy Londoners began storing their gold with goldsmiths, and they were given deposit receipts in return. These 'goldsmith's notes' began to circulate as money, as they were easier to carry and keep than the gold. Meanwhile, other people borrowed gold from the goldsmith's ample supplies. At some point, a goldsmith persuaded a prospective borrower to take a (fake) deposit receipt instead, since it was as good as gold. The goldsmiths wrote them out in increasing numbers, pretending the gold backing the receipts was actually in their vaults.

The goldsmiths grew wealthy from the interest on the loans, and the economy prospered from the infusion of new money (Werner, 2002, p. 170). The fraudulent practice was tolerated, legalized and regulated in the early 1700's, and further circumscribed by the newly founded Bank of England. During the 1800's, the practice continued with account money, which, in like manner, the bankers would provide out of nothing, by book entry, as freely as they had written fake paper receipts. During the 1900's banks were required to keep *some* money on hand (reserves), as they are today (although in some countries expressed as liquidity and solvency requirements).

The story of the London goldsmiths is one spectacular road taken by a nascent financial sector, illustrating how banks came to provide money or credit, or bank account digits, of their own creation. They *do* have some reserves to back up the money created, in the event that some customers want their account balance paid out in cash, just as the prudent goldsmith would not write out deposit receipts in excessive numbers: occasionally, customers actually came to exchange deposit slips for real gold. Such a run on the bank could prove ruinous, as history has shown repeatedly during crises (Kindleberger & Aliber, 2011).

Goldsmiths issuing notes morphed into bank lending

The crucial transition from basic gold lending to shrewd money creation came at the point when, in the above story, the first goldsmith started giving out deposit receipts not backed by gold.

We need to remind our lay listener that *money* is here treated as a token that represents a real asset (here: gold), as in: one deposit receipt per deposited gold piece. Using these 1:1 paper slips as money is the primordial monetary innovation *per se*, but *money creation* proper, in the sense of creating more money than warranted by resources, occurred when a goldsmith started writing out more receipts than he had gold in his vault.

This practice was fraudulent to the extent that the customer believed that he, or the merchant receiving the note in payment, would be able to retrieve the gold from the goldsmith, but would fail because the goldsmith had overextended himself. The more fake slips the goldsmith produced, the fewer borrowers could redeem any gold in the event of a bank run.

Fraudulent or not, the practice turned gold lending into banking. As one observer remarked: "Some ingenious goldsmith conceived the epoch-making notion of giving notes, not only to those who had deposited metal, but to those who came to borrow it, and so founded modern banking" (Withers, 1914, p. 24). This fact captures what makes banking special and different from mere money lending: the capacity of banks to write out new money, paper that purports to represent real resources when it doesn't.

In the act of coming for gold but accepting a deposit slip lies the key to the significance of the signed loan contract without which a loan cannot be made today. Bankers have been entrusted with remarkable powers: Out of my promise to pay a banker £100,000 (plus interest) at a specified time in the future, he is legally allowed to enlarge the nation's money supply and create £100,000 for me now. My neighbor can't do that for me, nor can a money lender in the street. Not even a central bank can do it for me, a private person. But a bank can: create legal tender out of something as evanescent as a promise to pay.

Where did that privilege come from? It came from the goldsmiths' audacious innovation: a prospective borrower comes asking for an ounce of gold, and the goldsmith says, in effect,

> "Well, how about we pretend that you just made a deposit of that much gold? Then I could give you a receipt for that gold, in the amount you want to borrow. I know you have not made such a deposit, but if you promise to do it later, like in a year (plus interest), I'll give you the receipt now. How does that sound to you?"
>
> "Fine," the customer may have replied, "let's just pretend I made a deposit of gold now; I'll be happy to actually only make it next year, with the usual interest accruing, as long as I get the receipt now, because I have payments tomorrow I need to make."

The customer's promise to make that deposit in a year is recorded by his signature on a piece of paper (the loan contract), which the goldsmith keeps for later enforcement. Money, in the form of the freshly written (fake) deposit slip, created *completely* out of nothing, is turned over to the customer against his promise to supply *later* the gold that both parties pretend was deposited *now* (Werner, 2005, pp. 167-171).

This sleight of hand provides the customer with the purchasing power he wanted from the gold he came for, and the goldsmith supplies it happily, securing for himself the later "return" of gold (or the corresponding deposit receipts, now money) *that he never possessed in the first place*. To this day, this is called a loan, even though the banker lends nothing. The goldsmith writes on a blank sheet of paper certain words and digits that turn the paper into money—just as, today, he writes digits into a ledger or an account, whether on paper or a computer screen, whereupon the customer gets to use it as money, on the promise that he will pay the particular amount (plus interest) later. Only by the considerable stretch involved in imagining that gold *could have been* lent can this be called a loan (Werner, 2014b).

Double-entry bookkeeping helps keep the lid on

Using double-entry bookkeeping, banks render lending inconspicuous. Let's see how. Customers' deposit accounts are liabilities from the bank's point of view; the bank only promises to pay out the money when I want to withdraw it. Correspondingly, when the bank grants me a loan of £100,000 and I promise to repay it, this promise, as materialized in a signed loan contract, is my liability to the bank, and hence an asset to the bank. When, applying for a loan, I sign the loan contracts, the bank enters "£100,000" on the other side of the ledger: Operated by the loan officer, the bank's loan management software adds a "1" to the sixth position to the left of the decimal point in the balance in my deposit account. A microsecond later I can use my greatly expanded balance to make payments in the amount of £100,000 by transfer to other bank accounts.

Thus, the bank's *ab nihilo* creation of money is completely rationalized by the matching entries in its books: the bank has extended its balance sheet by £100,000, adding this amount in proper fashion to its assets as well as to its liabilities. Nothing untoward has happened and, crucially, there has been no transfer of money into my account from any other account.
This remarkable process is known as bank lending. We have seen how its origins lie in the deposit receipts issued by goldsmiths and later regulated by the government. Individual goldsmiths/bankers occasionally suffered bank runs, which continued to plague European

and American banks well into the 19th century. Central banks were largely created to rescue the banking system from itself, providing banks with new money in times of crisis, as they do today.

There is another innovation we need to understand to appreciate the immense power of banks to create new money, and that is clearing.

5. Clearing: like neighbors exchanging work without money

We now leave behind the *paper* money of the goldsmiths and the school business week and consider the more intricate world of bank *account* money. How are the opportunities for creating this kind of money under the public's radar? Much better, as we shall see.

Banks in most modern economies operate a system that facilitates payments between account holders in different banks. Its essence is the cancelling out of like-sized payments that move in opposite directions between banks, thus considerably reducing the amount of money needed to settle these transactions.

During the centuries-long emergence of this system, merchants and bankers discovered that the process of *lending* to borrowers could piggy-back on the payment system (Ingham, 1999), in similar fashion reducing the bank's need for money (to extend loans). Due to the power of the payments clearing system, banks only need *very little* money to offer a client a *very large* loan, meaning that new money (the difference) has been created.

To help the layperson appreciate how money is created by being lent by many banks and then cleared between them, we start with the "clearing" that occurs between two neighbors doing a job for each other. Assume I am a web designer. I create a web site for my neighbor, who is a gardener. Normally, I would charge £2000 for this, but it so happens that I need some landscaping done. My neighbor does this, and instead of charging me his fee of £2000, he suggests we cancel or 'clear' the payments.

Due to our proximity, we can settle the two transactions without taking a penny out of our pockets. (We ignore the tax evasion involved here.) If we didn't know each other, it would be harder for us to get the web site and the garden fixed, especially if we had no money. Banks are institutions that facilitate contacts such as ours, helping distant consumers, producers and merchants trade. Take an example.

Banks' payment systems

A person, Mr Urbani, buys a cottage in the countryside from Ms Rurale for £100,000. Mr Urbani asks his bank, Citybank, to transfer the amount from his account to Ms Rurale, who has an account at Countrybank. On the same day, another customer of Countrybank, Mr Greendale, happens to purchase the consulting services of Citybank customer Ms Steeltower, in the amount of £100,000. Mr Greendale instructs Countrybank to pay this amount into Ms Steeltower's account at Citybank. The two transfers of £100,000, about to move in opposite directions in the interbank payment system the following night, cancel each other out; the system "clears" them. The system makes the relevant additions and subtractions to the four customers' accounts, in the amount of £100,000 in each instance: At Citybank, Urbani's balance is taken down and Steeltower's up; in Countrybank, Rurale's is up and Greendale's is down. The total balance of each bank is unchanged. Absent banking regulations, the two banks could be empty; not a penny is needed to complete the two transactions and the adjustments to the four accounts.

In the real world, there may be thousands of transactions between two banks during any one day. The national payment system add the payments going one way and those going the other way, and subtract one from the other, obtaining the net difference. The result of this 'netting', for example: £60,001, is what Citybank owes Countrybank after that particular business day. To settle their payments, this 'net position' must be transferred from Citybank to Countrybank (if they were the only banks in the system). This is the (small) amount of money needed by these two banks to settle the payments between them, amounting to many millions of pounds.

What happens in the case of three banks? Let's say the bilateral netting shows that Citybank owes £100,000 to Countrybank, and Countrybank owes the same to Regionalbank, and ditto for Regionalbank and Citybank. These identical net positions cancel out and again, no money needed to move between parties to clear their payments. If, on the other hand, the net positions are not similar, as is the case in reality, an overall result is obtained for each bank by adding all the positive bilateral positions (amounts owed to Citybank by all the other banks) and subtracting from this all the negative bilateral positions. This produces each bank's overall net position, whether the system has three banks or five hundred.

Let's say this position is -£402,003 for Citybank, this being the amount it owes all the other banks when totaled. If there were a pool of money for the five hundred banks participating in the payment system, Citybank could pay this amount into that pool, and all the other banks could do the same, depositing or withdrawing their overall net positions, to settle everyone's obligations after a given business day. As it happens, there is such a pool in modern economies. Each bank keeps an account, typically called a settlement account, for this very purpose with the Central Bank (or a similar central monetary authority). The sum of the balances in these five hundred settlement accounts is that pool. The nightly settlement is performed by software that executes millions of payments between participant banks every night and adjusts the balance in each bank's settlement account accordingly, up or down, keeping constant the size of the pool.

However, and crucially, these adjustments are usually tiny, compared with the large sum of payments they settle, maybe in the order of a few percentage points. We may visualize a deep ocean of payments, with billions of pounds being transferred between consumers, tax payers, businesses and government agencies each day, but the clearing is accomplished by pushing around only small ripples on the surface of this sea, the tiny adjustments in the five hundred settlement accounts.

Such is the functioning of the *payment system*, developed over centuries to facilitate trade between people who are not neighbors, relieving banks of the need to cart gold coins through the city every night.

Loans piggyback on the payment system

Now, let's consider loans and money creation. Historically, payment systems and lending practices have co-evolved and in official accounts, little is made of their possible differences (e.g., in Committee on Payment and Settlement Systems, 2003, p. 6). Nevertheless, they are conceptually separate systems. Their disentanglement is an important pedagogical goal, not least for its implications for monetary reform efforts.

Let's recall the point emerging from the goldsmiths story, that a borrower is not primarily interested in gold (or money *per se*), but in the *purchasing power* afforded by gold or money. Finding real money to lend is a hassle, as every street-corner loan shark knows. If you could only find some way to make it up. "Life is so much easier when one has a license to print money" (Werner, 2005, p. 179). The clearing process enables payments to be made, using very little money. That is, it creates purchasing power, which is, effectively, money.

"Ah, Mr Urbani, you say you want to borrow £100,000 from our bank for a cottage? Well, I can certainly help you pay for that." The typical bank customer will hear that the banker is offering him a loan, which involves the transfer of money from some other account into his account. For this sacrifice, the bank is of course entitled to interest. The bank officer is unlikely to protest this understanding, either because it is her own as well, or because she thinks the customer's misconception immaterial.

But *we* can speak with the banker's tongue, in our attempt to educate the lay reader:

> "Mr Urbani, you say want a loan. But a bank doesn't actually *lend* anything. That's just an old phrase we use. What we do is enable you to make payments. You see, we have access to this amazingly efficient payment and clearing system, and we can use it to obtain the cottage you want from Ms Rurale.
>
> Once we find you creditworthy, I'll open our loan management software and we'll complete your loan application with the amount of £100,000. We'll enter your bank account number and the software will add the digits 1, 0, 0, 0, 0 and 0 to your balance. These digits now count as money, but notice that this money was not transferred from some other account anywhere. The amount adds to the national money supply which, as you know, consists of cash and bank deposits. Enlarging a nation's money supply, of course, is creating money.
>
> At the same time, the software opens a loan account for you and enters the £100,000 outstanding, allowing both you and us to track your repayments.
>
> When you decide to spend the amount in your deposit account by transfer to another person's bank account, we insert this payment of yours into the clearing process. That is, we ready it for processing at night along with the thousands of other payments that our customers make today, and it is added to the others in the netting tonight. There's plenty room for your £100,000 in the sea of payments being processed. Most of them cancel each other out, clearing, like pairwise payments of equal sizes travelling in opposite directions.
>
> Now, if we had given you a very large loan, like £5,000,000, which you might spend all at once, then tonight, extraordinarily, we might be couple of million short. But there are routines in place that allow us to borrow that money from

another bank in the system, so no worry. As one banker put it: 'If we are short, we know the money has to be somewhere. Our only problem is to find it, and pay the price asked for it' (Gardiner, 2004, p. 152). Such an interbank loan will likely cost us a fraction of one percent, but that's OK with us because we charge ten or fifty times that on your loan.

Now that you got me sharing our insider's perspective with you, Mr Urbani, let me add that when times are good, banks really want to increase their lending. Banks can do this pretty much indefinitely, as long as they do it together. If we all step up our lending, we expand payments from maybe one billion to two billion pounds daily. However, this only *deepens* the sea of payments. If all banks do it, there will be hardly any change in the magnitude of the ripples on the surface, the small differences between the net positions that are handled by adjusting the settlement accounts. As the great economist Keynes said, as he was making certain assumptions, 'there is no limit to the amount of bank money which the banks can safely create *provided that they move forward in step*' (Keynes, 1930/2012, p. 23).

You see, banks only face problems in lending when one bank has lent so recklessly that the other banks—to put it colloquially—will no longer cover its behind in the nightly interbank lending market, for fear that it will collapse a few hours later and cannot service the loan just extended. This suspicion spreads quickly among banks; none dare lend, payments cannot clear, the system is stopped and suddenly it is rumored that cash machines may not open in the morning. The prospect that ordinary folks cannot buy groceries and may start food riots in the street is so terrifying to politicians that they rally to bail out these banks with big piles of government-created money.

The Central Bank usually steps in long before we get this far and, less dramatically, provides the loans needed. We say that the Central Bank is the lender of last resort. Well, as a matter of fact, today we joke that it is the lender of *first* resort, that's how keen they are on financial stability. We don't want our little boat to rock, even if some banks overextend themselves. Of course, there are limits to the Central Bank's and the Finance Ministry's patience. Banks are sometimes left to sink, like Lehman Brothers in 2008 in the US.

So, Mr. Urbani, there you have it: we let loans piggy-back on the payment system, or rather, we pretend they are loans, when we don't really part with much money at all, because the cancelling of payments going back and forth is such a money-saver for us. As long as we have the required pittance in the settlement accounts and the cash machines are full, the system works like a beaut. That's why government liquidity requirements are only 10% or 15% in most countries. That is enough; except when it isn't: at the peak of a bubble, or during bank runs, when the whole thing goes belly-up.

You may feel it is unfair that everyone's payments are at the mercy of the bank's lending operations, especially when the lending-and-spending euphoria sets in and the bubble pop is imminent. But what can we do? That's how the system is."

This concludes our bank officer’s inside account. The ease with which neighbors work for each other and discharge their obligations has been duplicated by banks and their payment and clearing system. Modelled on the symmetry of neighbors working for each other and the cancellation of their mutual obligations, the clearing system allows banks to grant loans and effect payments without putting up much money themselves. When the amount lent is used by the borrower to purchase a car, it enters the economy as money, new money created by the bank on its books.

Conclusions

Faced with the challenge of explaining money creation by commercial banks to a lay audience, and skipping the phlogiston of fractional reserves and credit multipliers, we availed ourselves of five analogies with accessible imagery and simple building blocks. Needless to say, analogies engage only a few aspects of reality and may easily be extended *ad absurdum*. That said, the school business week analogy may be elaborated gradually to look like a model economy, while the veil and the bathtub are images for beginners best left behind as understanding progresses. Further, the London goldsmiths and the clearing system, being empirical phenomena, are beyond embellishment.

Notice that none of the analogies relies on the T-accounts of double-entry bookkeeping, as forbidding to the layperson as equations in a popular science text. The educator blessed with an audience undaunted by assets and liabilities is referred to the excellent article by Furey (2013), who explains money creation (*sans* fractional reserve banking) to the slightly *more* advanced beginner than was presumed by the five interweaving analogies presented here:

The veil analogy uses a quilt knitted from squares like money tokens representing real assets. When too many squares are created, this quilt or veil is sent flying, expanding into a bubble that bursts and, now in tatters, holds too few squares, or money, for recovery to start. The goal of monetary policy is to keep the veil tight enough to represent the assets (stable prices), yet so supple that the veil hovers and allows for a dynamic economy (which requires sufficient credit, a few extra squares in the quilt). When commercial banks, pursuing their own profits, control the money supply, this national goal is difficult to maintain, making for a boom-and-bust economy.

The bathtub analogy underscores the dynamic and replenishable nature of the money supply, allowing us to see money as being continuously created and extinguished, by the agent turning the faucet: in our system, mostly commercial banks. The similar analogy of a population features sex as a source of people creation which, traditionally, has been kept out of polite conversation much like the procreative monetary powers enjoyed by banks are today.

The school analogy helps us see all the money in an economy as a system. A monetary system may be run by a committee acting in the interests of the whole, like the Money Creation Committee of Huber and Robertson (2000), or it may be controlled by special interests, J.P. and similar banks. A sovereign can create its own money and spend it debt-free into circulation, only withdrawing money (through taxation) to lessen overheating (the veil flying to high, the bathtub overflowing). If private agents, like the banking sector, are in control of the nation’s money supply, they can issue money as loans, requiring households and companies to go into debt for there to be any money in the economy at all. When such debt is repaid, money disappears, shrinking the economy, keeping the veil too tight and the bathtub too low on water for the economy to function and people to prosper and flourish.

The goldsmiths accepted gold for storage and wrote out deposit slips, which soon circulated as money. At some point, someone came to borrow gold and was persuaded to take a newly written deposit slip instead, as if he had deposited gold. Thus we may explain why fresh deposit slips, or newly created money, are still called loans today: because gold *could have been* lent, and the borrower didn't mind either way, nor does she today; all she wants is the purchasing power afforded. This initial fraud produced ample credit, fuelling production and trade, expanding the veil. For that reason it was accepted by governments and regulated to prevent excesses. This accounts for the magic of banking, the power of banks to create money out of nothing, like a goldsmith taking out a pretty piece of paper from his drawer and writing "£100" on it for his borrower waiting in the hall.

The fifth analogy, again more reality that simile, was that of *clearing* as executed by neighbors swapping work efforts. If no neighbor is at hand and I hire a stranger for my landscaping, he needs to be paid, and banks help me pay him through the payment system. When I don't have the money, banks will lend it to me, but they no longer write out deposit slips or print actual bank notes in their basement, like they did in the 1800's. They use account money freely invented, which, when entered as payments into the interbank payment system, more or less cancel each other out, requiring the banks to put up no more than the marginal differences between the millions of payment moving between banks every night. This is the real source of money creation in the modern economy, this decentralized system of banks extending loans for practically for free, lifting the veil and filling the bathtub, but under no other control than the sets of government regulations circumscribing banks' lending practices by the minimal requirements of liquidity and solvency ratios, plus whatever other restrictions apply nationally.

Beyond the scope of this article is an appreciation of alternatives to the present system. A mere glimpse was afforded by the money creation committee in the school business week, a vision of a government agency under democratic control being in charge of the monetary system, especially the money supply. This is a system that does not let banks exploit the payment system for money creation purposes, endangering it when bank lending grows reckless. Ordinary payments would be kept separate from lending activities. The amount of credit available in the economy is regulated by a transparent panel under public oversight and is allocated for banks to dispense, given that they are uniquely suited to assess the creditworthiness of local businesses and investors (see Huber & Robertson, 2000; Ryan-Collins et al., 2011; Jackson & Dyson, 2012).

Whether one leans toward monetary reform or not, a thorough understanding of the present monetary system is a democratic imperative. Orthodox economists have had a field day (or, rather, field century) shrouding their knowledge claims in jargon and mathematics, shielding them from popular understanding and critique. May the heterodoxy not perpetuate this folly.

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SUGGESTED CITATION: Ib Ravn, "Explaining money creation by commercial banks: Five analogies for public education", *real-world economics review*, issue no. 71, 28 May 2015, pp. 92-111, http://www.paecon.net/PAEReview/issue71/Ravn71.pdf

Realist econometrics? Nell and Errouaki on methodological institutionalism, regularity and uncertainty

Edward J. Nell and Karim Errouaki, *Rational Econometric Man: Transforming Structural Econometrics* Cheltenham: Edward Elgar, 2013, 545pp. ISBN: 978 1 84980 154 6

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Introduction

Nell and Errouaki state that their intent is to reformulate econometrics along more realistic lines. In so doing they also explicitly acknowledge a debt to realist debates in methodology, notably in relation to the construction of argument regarding the nature of science, objectivity and laws in Chapter 4 (Nell and Errouaki, 2013: xii). This requires some context, since seeking to be more realistic and accepting the tenets of realism are not necessarily the same. One is theory and application, and the other is argument regarding the grounds of theory and application. Moreover, the status of econometrics in relation to realism is not an uncontroversial subject. Nell and Errouaki's work is worth careful consideration because its themes are so little considered within econometrics, despite their relevance for the role and realisticness of econometrics. The vast majority of work on econometrics concerns problems of method only – the technical limits of methods and resolutions to technical problems – very little of it concerns how (and whether) an econometric inquiry should be structured and pursued in order to be adequate.

Placing Nell and Errouaki in context: realism and mathematics

The realist critique in economics centred in particular on the Cambridge Social Ontology Group (CSOG) focuses on the problems of closed system theory and method. The core of the argument is that any theory or method that presupposes or seeks forms of regularity (a whenever x then y) in events provides an overly limited account of an economy. Since social reality is a historically complex set of inter-relations that are in process and subject to cumulative (and hence qualitatively shifting) causation, any theory or method that presupposes or seeks forms of regularity will *over time* fail as an explanatory endeavour (since relative stability is not regularity per se and stability breaks down). The implication is that the overwhelming promotion and then (in the face of observed periodic failures) preservation of such theory and method perpetuates a misspecified basis for economics. Perpetuation is then also an impediment to the development of economics, since the preservation of problematic forms will tend to undermine innovation that occurs from within this misspecification.

Tony Lawson, as the most prominent member of CSOG, has been careful to state that he is not opposed to mathematics:

> I hope by now the highly conditional nature of my criticism is apparent. It is not, and has never been, my intention to oppose the use of formalistic

> methods in themselves. My primary opposition, rather, is to the manner in which they are everywhere imposed, to the insistence on their being almost universally wielded, irrespective of, and prior to, considerations of explanatory relevance, and in the face of repeated failures. (Lawson, 2003: xix)

However, despite such statements the core argument has created some controversy within heterodox economics regarding the use of mathematics in general and econometrics in particular. Lawson's critique is oriented primarily on today's mainstream. The claim is that the problem of closed systems, regularity-focused, varieties of theory and method are central aspects of today's mainstream economics. Since the critique is initially oriented on the current mainstream the ready inference is that typical modes of expression and application in the mainstream are, caveats not withstanding, *necessarily* problematic: notably the statement of theory along formal lines and the building of models and applications based on analytical statistics. The contrasting inference is that heterodox economics is different than the mainstream. A well-known essay by Lawson, which claims an underlying unity of heterodox economics based on varieties of open system theorisation, emphasises this difference from the mainstream (2006). The idea of a contrast with the mainstream lends itself also to the inference that the most effective expressions of the open system unity in heterodox economics eschew formalism and resists a default to unthinking uses of econometric applications. A recent essay by Lawson seeking to rehabilitate Veblen's original concept of neoclassical economics based on the problem of a mismatch between social ontology and method (whereby some heterodox economists inadvertently become neoclassical), has served to encourage this sense that CSOG advocate a heterodox economics that is *more than* mathematical-quantitative (Lawson, 2013). However, quite what this means, is itself a matter of some controversy. CSOG in general and Lawson's work in particular has acquired a reputation as not just advocating more than mathematics, but rather as anti-mathematics, despite Lawson's statements to the contrary (see, for example, Mohun and Veneziani, 2012).

There are, however, attempts to sympathetically reconsider the role of mathematics in economics that attempt to absorb some of the claims of CSOG, and these create a challenge to the general perception of the work on social ontology. Velupillai's work is of this kind (2007, 2010). Velupillai argues that we have been conned by increasing mathematical complexity into ignoring that the mathematics is often ill-used because of the:

> cons that are replete in a kind of mathematical economics that relies on them for formalizations, theorizing and inferences. Reliance on them leads to whimsical assumptions, entirely determined and dictated by the mathematics and not by the ontology of economic entities, institutions and behaviour. As a consequence the inferences are inherently fragile or even senseless, since they require impossible approximations from uncomputable entities and undecidable propositions. (Velupillai, 2007: p. 468)
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> The belief in the power and necessity of formalizing economic theory mathematically has thus obliterated the distinction between cognitively perceiving and understanding concepts from different domains and mapping them into each other. Whether the age-old problem of the equality between supply and demand should be mathematically formalized as a system of inequalities or equalities is not something that should be decided by mathematical knowledge or convenience. Surely it would be considered absurd, bordering on the insane, if a surgical procedure was implemented

> because a tool for its implementation was devised by a medical doctor who knew and believed in topological fixed- point theorems? Yet, weighty propositions about policy are decided on the basis of formalizations based on ignorance and belief in the veracity of one kind of one-dimensional mathematics. (Velupillai, 2007: p. 488)

Velupillai brings the fundamental issue back to a basic problem expressed in the philosophy of mathematics, the split between arbitrary mathematical systems and actually constructible ones. He then seeks to rebuild economics based on what can actually be constructed. Given an economic system is recognizably complex and shifting, the mathematics is then necessarily addressed to complexity, rooted in Velupillai's case in computability (2010).

Velupillai explicitly states a debt to Lawson in his thinking on the nature of how an economy works. Post-Keynesians in particular are long-term advocates of non-linear mathematical approaches to modelling an economic system (for example, Steve Keen, 2013; or Mark Setterfield, 2000). In addition to ensuring money is actually incorporated into theory, Post-Keynesians tend to model economies as subject to endogeneity, and as complex, fluctuating processes, subject to instability and degrees of uncertainty, rather than cycles, (dis)equilibrium and definite paths. This requires a rather different approach to mathematics than has dominated the mainstream (see also Fullbrook, 2013, 2015), but one that embraces the basic insight that an economy is an open system, irrespective of any ambivalence regarding how Lawson's work is also perceived and sometimes misperceived (see Morgan, 2012).

Nell and Errouaki's core claim and its significance

Nell and Errouaki's latest work *Rational Econometric Man* takes a slightly different approach to open systems and complexity, albeit one that is also indebted to Keynes and Post-Keynesianism. Nell and Errouaki argue that economies are open systems but that there are in fact, because of the nature of social reality, actual quasi-regularities that econometrics can capture. However, these are radically different in origin than modern econometrics supposes. They are not a product of individuated rational (bounded or otherwise) agents, where agents can be persons, firms, households etc., and where such agents are always subject to methodological individualism. Rather they are a product of time sensitive institutions that provide for a degree of stability in behaviour. It is the interplay between agent's behaviour and the structured situations in which they are able to act that result in either the reproduction of the grounds of the interaction or their transformation. Moreover, some grounds tend to be more enduring and some more volatile, so not all aspects of the economic system can be considered quasi-regular even during periods of stability. There is, therefore, a difference between what is regular within stability and the manifestation in events of stability.

The central claim remains that regularity provides a reliable focus for econometric investigation, despite that one must be able to distinguish between what is regular within the economy and any current degree of stability in that system. The critique of contemporary econometrics lack of both realisticness and realism requires a profound change in how econometrics is perceived and pursued. If regularity occurs within an open system, based on agency-structure and institutions, then realisticness requires that one must do more than identify and test regularity, one must do so in a way that reciprocates with theory, since the grounds of "regularity" can shift. As such, one cannot simply introduce theory as a mere set of unrealistic assumptions that underpin econometrics, nor can one simply dispense with formal theory and its testing or consideration as an aspect of econometrics. One must rather build research programmes that shift back and forth between theory formation and econometrics based on adequate data processing. There is here some degree of crossover with the intent of Hendry, the most innovative of econometricians to consider the problem of methodology. According to Hendry:

> The problems of econometrics are many and varied. The economy is a complicated, dynamic, non-linear, high-dimensional, and evolving entity. So studying it will be difficult. Society and its social system both alter over time, laws change and technological innovations occur, so establishing invariants of the system will not be easy… 'Theory driven' approaches in which a model is derived from a priori theory and calibrated from data evidence, lie at one extreme. These suffer from theory dependence in that their credibility depends on the credibility of the theory from which they arose – when the theory is discarded so is the associated evidence… 'Data driven' approaches, where models are developed to closely describe the data, lie at the other extreme. These suffer from sample dependence in that accidental and transient data features are embodied as tightly in the model as permanent aspects, so that extensions of the data set often reveal predictive failure. An interactive blend of theory and evidence naturally suggests itself. (Hendry, 1995: p. 6)

It should be noted that there are significant differences regarding the concept of realism between Hendry and Cambridge Realists (see, Pratten, 2005)[1] and Nell and Errouaki do not actually address these to any degree (However, see Nell and Errouaki, 2013: p. 236). They recognize Hendry is concerned with similar issues to themselves but go back to the origins of econometrics for their initial inspiration.

The substance of the argument

Nell ought to be familiar to anyone with an interest in economic methodology, as the co-author with Martin Hollis of the classic *Rational Economic Man* (1975) and as an economic theorist with longstanding interests in growth theory (transformational growth), monetary economics and institutions. As noted Nell and Errouaki acknowledge an explicit debt to the CSOG position on social ontology (Nell and Errouaki, 2013: xii). However, in terms of the

[1] Hendry is notably more assertive regarding the centrality of econometrics of economics, and also differs over the justification if it. For example: Empirical econometric models are systems of quantitative relationships linking observed data series. They have four main roles in economics. First, they are data summaries: there exist too many variables of potential interest in economics for us to investigate them all, so summarization is essential. And econometric models are one way. Secondly, econometric models allow us to interpret empirical evidence: facts rarely speak for themselves, and a well-defined framework, such as an econometric model, will prove invaluable. Thirdly, there are often several competing theoretical explanations for economic phenomena: econometric models play an important role in evaluating the relevant explanatory powers of these theories. Finally, econometric models are the primary vehicle for the accumulation and consolidation of empirical knowledge about how economies function. In the long run, this may be their main *raison d'etre.* Since econometrics is essentially empirical in nature, it offers a potentially scientific approach to understanding human conduct, and is the major source of systematic information about economic behaviour… However it must be stressed that the economy is too large and complicated for us to develop 'true' models of it. Rather empirical models are invariably simplifications and, in that sense, invariably false… Consequently, we must develop other criteria than truth to judge empirical models and select between them. (Hendry, 1995: p. 4)

econometrics, *Rational Econometric Man* (2013) takes as its point of departure the original intentions of the New School International Seminar in Econometrics, which ran in the early 1940s (or Cowles approach, named for the Cowles Commission for Research in Economics, which followed it beginning in 1943). The focus begins from the work of Haavelmo and encompasses the subsequent work of Lawrence Klein and others. Nell and Errouaki cite Mary Morgan for the original intent and orientation:

> Econometrics was regarded by its first practitioners as a creative synthesis of theory and evidence, with which almost anything and everything could, it seems, be achieved: *new economic laws might be discovered and new economic theories developed, as well as old laws measured and existing theories put to rest.* This optimism was based on an extraordinary faith in quantitative techniques and the belief that econometrics bore the hallmarks of a genuinely scientific form of applied economics. In the first place, the econometric approach was not primarily an empirical one: econometricians firmly believed that economic theory played an essential part in finding out about the world. *But to see how the world really worked, theory had to be applied; and their statistical evidence boasted all the right scientific credentials*: the data were numerous, numerical and as near as possible objective. Finally, econometricians depended on an analytical method based on the latest advances in statistical techniques. (cited Nell and Errouaki, 2013: 61)

As both Nell and Errouaki and Hendry note this early potential gave way to a degree of cynicism and shift in how econometrics was positioned and pursued. For Hendry a great deal of econometrics simply became a simulation of scientific inquiry, a form of “Alchemy” (1993).

According to Nell and Errouaki, “the problems of econometrics may lie not so much in econometrics itself as in the unrealistic approach to economic theory on which it has drawn to specify its functions.” (Nell and Errouaki, 2013: 41). The core problem they identify is the neoclassical rational economic agent and its constrained variants and also its many expressions via equivalent terms for the agent such as the household, the firm etc. This economic agent cannot be constructed consistently based on deduction and cannot be derived from induction since actual agents lack the properties of the economic agent; the agent is an idealisation not an abstraction. The problem is one within the “DNA” of neoclassical (by which the authors mean core mainstream) economics. It “also undermines methodological individualism; if behaviour cannot be reliably predicted on the basis of the ‘rational choices of agents’, a social order cannot reliably follow from the choices of agents… What is needed to rebuild econometrics is realism in theory” (Nell and Errouaki, 2013: 30-31). Without this realism in theory, the link between adequate theory and data and data and adequate theory is broken. This is compounded by a problem of data:

> The econometric model builder is rarely involved directly with the data collection and refinement, and often has to use published data knowing very little about their origins. This lack of knowledge can have serious repercussions on the modelling process and lead to misleading conclusions. Ignorance related to how the data were collected can lead to an erroneous choice of an appropriate sampling model. Moreover, if the choice of data is based only on the name they carry and not on intimate knowledge about what exactly they are measuring, it can lead to an inappropriate choice of the

> statistical generating mechanism and some misleading conclusions about the relationship between the estimated econometric model and the theoretical model as suggested by economic theory. (Nell and Errouaki, 2013: 42)

Since the recognized problems for Nell and Errouaki are unrealistic theory construction and irresponsible use of data then the solution that follows is to construct theory that is realistic (can approximate social order and its characteristics) and to ensure better data and better use of data. More specifically the solution begins from methodological institutionalism. The economic agent exists in a set of institutions and behaviour is conditioned in and through these institutions (there are structures and there are socialised agents). Institutions are historic and thus transient. At the same time institutions create relatively stable conditions for economic activity, so for some period they are a source of relatively recurring behaviour (they are objective conditions even if they are rules and concepts rather than material bodies). These institutions are corrigible so the specification of them is also a research question, one does not simply assume and impose them. Fieldwork is thus necessary and intrinsic to theory specification, iteration and respecification, and so there is a reciprocal relationship between well-conceived empirical research, adequate data collection and theory formation. There is a very clear contrast here with much of contemporary modelling and econometrics:

> Neoclassical models analyse behaviour in specific ways. Instead of drawing on fieldwork, to define motivation and set the problems of choice in well-described institutional context, agents are considered abstractly and presumed to be rational and choose freely. This, then, leads to models that exhibit a particular kind of market behaviour, which we can call a 'stimulus-response' pattern… It is assumed that actions in response to stimuli are successful… Given the behavioural assumptions, reaction patterns to such hypothetical stimuli are constructed, and from these sets market functions are aggregated. Equilibrium market positions are then determined by solving the market equation on the hypothesis that behaviour will be adjusted as stimuli move, until the markets are cleared… But the stimulus-response approach is appropriate only for describing agents who are understood as having given motivations and values. The agents must also be understood as having given knowledge of the world; they do not learn or innovate [in neoclassical models they are passive in a fixed world. By contrast one must establish more realistically behaving agents and a more realistic world – its structures] actual or observable agents are rarely similar to the types postulated by the model… Structural models show how the economy maintains and reproduces itself. But it will not do so in exactly the same way every time – agents with active minds will see to that. Market adjustment will confront agents with characteristic problems [but] the system evolves. (Nell and Errouaki, 2013: 383-384)

For Nell and Errouaki economics can become a better science if it explores and represents the actual characteristics of its object of study more appropriately. They claim social reality is geographically and historically bounded and so laws cannot be of the kind found in physics though perhaps they may overlap with biology. Moreover, some aspects of behaviour are simply volatile and so subject to uncertainty in Keynes' and Knight's primary sense. However, they also claim, following Klein, that the conditions of social reality are sufficiently fixed for law-like relations to hold in given places and times. Institutions give a degree of fixedness to reality and this justifies structural approaches to econometric modelling. One can explore the whole in a way expressible as, modifying an approach developed by Bonnafous, a “methodological triangle circle” or MTC: (Nell and Errouaki, 2013: p. 152-154 and 171). The idea is to operationally unify coherent theory, measurement (quantification) and applications of theory (relevance).

Nell and Errouaki are candid in respect of this MTC. As a methodological statement in the context of the idea of social science quasi-laws for economics MTC seems manifestly superior to the many contradictions and failings of modern econometrics, which are, in the ordinary scheme of things simply passed over. However, *Rational Econometric Man* is not just a sophisticated work of methodological critique that seeks to state an alternative as an unproblematic general solution, simply because the alternative differs from the work it critiques. Nell and Errouaki recognize and seek to address key problems of the inter-relation between theory, measurement and application. For example:

> There is absolutely no reason that relationships of statistical reality should be linear; furthermore one notes that economic reality is often incompatible, even as an approximation, with the mathematical tool (be it linear or non-linear)… [And] The measurement of model parameters from statistical samples requires the use of estimating techniques that were developed within the theory of probability and are based on specific probabilistic hypotheses (normal distributions of residual terms, independence of random variables, etc.)… There is no particular reason for these hypotheses to match a statistical reality. (Nell and Errouaki, 2013: pp. 178-180)

For Nell and Errouaki, though there is no reason that relationships must be linear, it does not mean that they cannot approximate linearity for some period in some ways. More generally in terms of the justification and more specifically in terms of a focus on economics Nell and Errouaki claim that it is good fieldwork that brings together the MTC and it does so on the basis of different ways one can specify key components of an historically recognizable economy:

> The ‘economy’ we argue, implies a market system of some sort. By saying that in a particular society ‘an economy exists’, we mean that the regular reproduction of the structure of that society is carried out by a market system; the society continues to exist because of activities carried out under market incentives. By a market system we mean that there are relations of Ownership, o relations, and these are expressed in terms of value, v relations. (Nell and Errouaki, 2013: p. 125)
>
> The o and v relations are directly related to the MTC diagram: v relations ensure measurement and o relations ensure applicability… Fieldwork done properly will reveal o and v relationships, as well as other ones, and this will tend to ensure relevance… Fieldwork will enable us to take in and understand the concepts that guide social and economic practices; conceptual analysis will develop them into theories. (Nell and Errouaki, 2013: p. 183).

Here fieldwork allows one to come to know or be familiar with the concepts, norms and rules, which guide economic activity. Econometrics becomes a way to estimate the parameters of law-like relationships created by an economy founded in and reproducing ownership and value. The way the whole is set up here seems to lead easily to a focus on Nell's own longstanding interests in economic theory, which broadly straddle Post-Keynesian and institutional concerns. Chapter 11 provides a number of illustrations of MTC as the basis for a considered use of econometrics in relation to open systems. For example, the relationship between unemployment and inflation. In chapter 11 they briefly set out how fieldwork undermines the neoclassical claim that unemployment is voluntary and inflation is caused by excess money. Any investigation of real structures, rules and institutions leads to the conclusion that actual economic activity is structured, conditioned and institutionalised in ways that allow for involuntary and structural unemployment and where inflation does not arise simply because of more or less money in the system. For example, ownership and investment matter in particular ways based on convention and law. At the same time, one can make use of well-understood relationships to use econometrics in pursuit of better concepts and as support for more adequate theory. Recalling that "the problems of econometrics may lie not so much in econometrics itself as in the unrealistic approach to economic theory on which it has drawn to specify its functions" (Nell and Errouaki, 2013: 41) they state:

> Mainstream economics has not done a good job with inflation… The problem of the large econometric models in the 1970s were less in estimating than in specifying relationships and model structure, particularly the relationships between the real and financial aspects of the economy… This was particularly true of production; fixed coefficient models held up well, but neoclassical marginal productivity models turned out to be deeply flawed – they purported to estimate production but actually captured cost identities. Yet the estimations of many particular relationships proved sound; parts of the models held up throughout. These were the reliable functions – household consumption spending in various categories of goods and services, labour productivity in the different sectors, import propensities, multiplier relationships – all of which generally came through ok. In these functions the 'targets' are well-defined – we know what the process is aiming at or trying to achieve – so there are good reasons to expect certain mean values. And the forces or pressures that bring about 'misses' are also well understood; we know what gets in the way of achieving the targets, or causes deviations. (Nell and Errouaki, 2013: p. 406)

For Nell and Errouaki the implication is that one can, within the MTC recontextualise the relationships and specify different kinds of models rooted in better theory that accords more with experienced reality of how economic activity is structured and how agents really behave. Chapter 11 also uses Nell's work on transformational growth to illustrate how econometrics can be part of an historical open systems account of periodisation:

> We suggest that econometrics and macroeconometric model building should be more sensitive to large-scale changes in the characteristic patterns of data. For example, it is well-known that in the nineteenth century fluctuations show up more prominently in price data than in employment or output series, whereas in the twentieth century the reverse is true, particularly after World War II. Accordingly, transformational growth contrasts two general 'models of adjustment' of capitalist societies. These are both macro models, and are both based on reliable relationships – firms selling in competitive conditions, households spending to support themselves. Each model is abstract and quite general, but nothing is 'idealised'. Each is presented 'mathematically',

> although the functions are abstract and aggregate, so that fitting data to them would require careful attention to the definitions of the variables. But it is argued that functions correctly represent directions of variation, and rough relative orders of magnitude, and that each represents the working of the system during a particular historical period. (Nell and Errouaki, 2013: p 431)

Ultimately:

> Econometrics is about economics; it proposes using measurement to amplify, develop and test *explanations*, and with it, our understanding of the structure of the economy and how it works; it is not about forecasting, or about reliable statistical relationships that lack economic content. Econometrics provides numerical content to economics, making it possible to test and amplify economic theory by directly applying it empirically. It rests on three pillars: theory-coherence, applicability-relevance, and measurement-quantification… The ambitions of the early econometricians were not wrong [testing theory etc but]. They thought that conventional economic theory was largely sound, and that their job was to fill in the numbers in the relationships that theory proposed. They were wrong; much theory has been misleading, and much has simply been irrelevant – having no application. But the economy is a system, a social system, and it keeps itself in existence by engaging in a pattern of production, distribution, consumption and exchange, regulated by ownership rights and value transactions. Once we understand *this*, we can see our way to uncovering and defining the relationships involved, and this will give us a foundation on which to build. We can do econometrics – not exactly the way the founders wanted, but well enough to provide a testing ground for our theories. (Nell and Errouaki, 2013: p. 477)

Conclusion

Rational Econometric Man is an important book regarding an under-discussed subject. Econometrics has become ubiquitous in economics, yet fundamental arguments regarding what it can achieve and how it ought to be positioned remain rare. This is partly because any such fundamental discussion cannot avoid acknowledging the deep problems the field has accumulated. It is far safer to simply focus on technical issues of given models and methods and then make bland statements regarding dilemmas of observational equivalence and undecidability. Nell and Errouaki take a different path. They combine sophisticated methodological critique and analysis with a clear central argument. Econometrics can contribute to a more realistic economics. The project is more than mathematical but is about the constructive use of mathematics and statistics. The innovative approach to methodological institutionalism flows directly from Vellupillai's concern to reverse the way "whimsical assumptions, entirely determined and dictated by the mathematics and not by the ontology of economic entities, institutions and behaviour" (Velupillai, 2007: p. 468) have dominated the use of mathematics. It is, as such, a significant contribution to applied realist methodology.

However, though *Rational Econometric Man* is an important work it does provoke a range of further considerations. Though the work is about more than mathematics it does still proceed as though mathematics is the most appropriate way in which an economic argument can be expressed, and an empirical economic investigation can be constructed and used to "test" and develop theory. This is mainly assumed rather than argued for, because economics is a science. More could have been said about why economics ought to be mathematical. Moreover, though the argument made does not reduce to a demonstration or confirmation of Nell's work on economic theory, since the claims are broader, the illustrations tend to convey the impression that it is in terms of Nell's work on theory that regular relations within the econometrics can be made sense of. Given the MTC is about the relation between theory, investigation and data, where all are subject to modification, a sceptic might wonder that the actual illustrations often read like confirmations. It would be unfair to make too much of this since the problem would be difficult to avoid, given that Nell has a lifetime's worth of well received economic theory to draw on, and that theory is so clearly within an open systems framework of the kind any appropriate use of econometrics is liable to be referenced to. Still, one could perhaps construct a variety of counter-arguments regarding theory confirmation based on different open systems interpretations because of the recognized problem that "although the functions are abstract and aggregate, so that fitting data to them would require careful attention to the definitions of the variables" (Nell and Errouaki, 2013: p 431). Given the point of reference would be econometrics within open systems this would still be progress.

However, the use of econometrics as that point of reference may also invite further questions regarding the status of econometrics. Nell and Errouaki's argument is that econometrics has radically misconceived the source of relative regularity within an economic system. It cannot follow from methodological individualism and individuated agents, but rather is a consequence of structured activity expressible in methodological institutionalism. This way of looking at historical systems seems to directly address the social ontology critique that any theory or method that seeks or presupposes regularity will over time fail as an explanatory endeavour, since the very basis of methodological institutionalism is to time-constrain regularity. Nevertheless, the focus remains regularity and there may be some slippage of usage of the term here.

Nell and Errouaki state that "there are good reasons to expect certain mean values" (Nell and Errouaki, 2013: p. 406). In the end the argument is about a different use of econometrics rather than a different econometrics. The focus remains essentially one where probabilistic relations can meaningfully represent key aspects of social reality, within an economy. This may be so, but two points then follow. First, the MTC is unified by good fieldwork. In the end it is the degree to which the economist is immersed in and appropriately familiar with the empirical aspects of an economy that dictate their capacity to develop (as well as be guided by) good concepts and theory. Econometrics is not itself liable to result in this immersion in the empirical aspects of the economy. It is a form of "test". Yet the broader contextualising test is less rigorous and more qualitative, if not necessarily intuitive. It is the openness to and feel for many kinds of data, processed in a variety of ways. The significant difference between neoclassical economics and open system approaches is not just based on the rejection of idealised unrealistic assumptions – it is in the commitment to start from the reality of how an economy is and to accommodate theory to that reality (without reducing this to an empiricist fallacy). The implication is that multiple methods are important rather than many data sources that feed into econometric modelling only. Nell and Errouaki could perhaps have emphasised this more – since it is not antithetical to their argument and is consistent with their approach to fieldwork.

Second, the overall discussion of econometrics may still leave the status and reality of a stochastic regularity contestable, if not ambiguous in relation to methodological institutionalism. In econometrics the quantification of the relationship is synthetic; it is an expression of an averaging effect not an intrinsic component or shaper of the activity. Its role in law like behaviour is then also potentially contestable, since no one is acting from or following the average (it is not part of agents reasons for acting) and the average is not part of the institutional conditions that structure or contextualise economic activity (it is not creating a downward causation). Clearly, Nell and Errouaki are aware of this, since the argument for o and v relations notes also that social reality including an economy is based on the powers or capacities of significant entities (and it is this that defines something as real, for example, Nell and Errouaki, 2013: p. 430). However, given that powers or capacities of significant entities result in tendencies to act in given ways, regularity, even stochastically expressed regularity, is different than the existence of, and expression of, a power. So from a methodological point of view there may be more to say here in order to adequately clarify and justify the status of econometrics as a form of realism and as a contribution to more realistic economics. This is by no means to denigrate this excellent work and its achievements, it is simply to note there is still more to say and do, since the work is not just a claim that "this way works," it is a methodological exploration of how we conceptualise and argue for what works. In any case, I would urge anyone with an interest in econometrics to read this book and so better understand what it is that they are doing and what it is that they could do.

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SUGGESTED CITATION: Jamie Morgan, "Realist econometrics? Nell and Errouaki on methodological institutionalism, regularity and uncertainty", *real-world economics review*, issue no. 71, 28 May 2015, pp. 112-123, http://www.paecon.net/PAEReview/issue71/Morgan71.pdf

real-world economics review, issue no. 71
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Who does the state work for? Geopolitical considerations in the organization of (global) finance

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Abstract
States acting as lenders of last resort in the aftermath of the 2007/2008 financial crisis clearly illustrated the central role that states have in the operations of financial markets. Despite their active roles, however, states continue to be presented as passive actors that dance to the tunes of the financial markets. This paper, however, takes a close look at how states' geopolitical concerns influence financial regulation. States are perceived as serving the interests of their citizens, yet future rescue operations (as lenders of last resort) at the costs of the taxpayers remain a strong possibility – in particular, Too Big To Fail (TBTF) banks persist and their leverage-ratios have not greatly improved. To better understand why this is the case, this paper argues that geopolitical concerns influence the triangular relationships between the (democratic) state, the financial sector, and the state's citizens (and taxpayers) in favour of the financial sector. Accordingly, the paper argues that we should more explicitly ask 'what drives states (and politics) in their approaches to finance?'

Keywords: financial regulation, state finance dichotomy, geopolitics, future crises, lender of last resort, global markets

Introduction

To mitigate the economic and social costs of the 2007/2008 financial crisis, many governments, in particular in the West, have gone at great lengths to rescue their financial sectors – TARP in the Unites States, (partial) nationalizations of the RBS in the United Kingdom, ABN AMRO in the Netherlands, and the saving banks in Spain, are just a few examples of state interventions. More than six years later, this has resulted in two views: one, that 'we have done a lot' since the crisis erupted, and the other 'that we are a long way from completing the far-reaching changes that we need' (Johnson, 2014). There is more consensus, though, about the fact that it is unfair to have taxpayers footing the bill for market failure – not the least, because this is perceived to undermine democracy (e.g., Shaxon and Christensen, 2013; Streeck, 2014). Proponents of greater government intervention and the supporters of laissez-faire free market ideologies may differ in approach, yet rarely is *privatizing profits and socializing losses* voiced as a sustainable model for a more robust financial system.

This paper argues that notwithstanding political claims about protecting the taxpaying citizenry, most states tend not to meet these claims. Without doubt, states and international regulatory institutions have drafted impressive regulatory responses – hence, the argument 'we have done a lot'. But despite a large variety of regulatory changes and proposals aimed at minimizing the economic and social costs of future crises, it seems unlikely that states will not have to financially step in when finance fails again. For example, the Too Big To Fail (TBTF) issue has all but disappeared, while the current leverage-ratio of most banks hardly safeguards these banks from insolvency in the case of negative shocks (e.g., Allesandri and

Haldane, 2009; Admati and Hellwig, 2013; Johnson, 2014). Hence, although the using of (future) tax-incomes to prevent financial institutions from bankruptcy may be rejected on moral grounds, the potential to re-apply the same approach in the case of future crises has not diminished. Equally, as a result of states' financial injections and/or the decline of tax incomes, austerity measures aimed at decreasing sovereign debts and at (re)financing these debts at advantageous interests rates remain pertinent; and notwithstanding that austerity measures are characterized by a larger variety of opposing opinions, they also result from states prioritizing the opinion of financial markets.

To better understand why states have so far only limitedly relieved the (future) predicament of their taxpayers, this paper seeks to explore the relationships between democratic states, their respective citizenry, and national and international financial sectors. It particularly aims to analyse states' political balancing between geopolitical considerations and the constructing of a solid financial system that prevents citizens from suffering he burden of failing financial institutions. A central quest in the analysis, and which has so far received relatively attention in understanding state responses to the financial crisis, is 'what drives states (and politics) in their approaches to finance?'[1] How geopolitical considerations shape state responses, the paper argues, need to be explicitly addressed if we want to better understand the current state of financial regulation. The paper will, first, give a short overview of the relationships between the state and finance – more generally and with regards to the last financial crisis. After that, it will address the relationship between state and its citizens and the value of politically voiced narratives to prevent taxpayers from picking up the bill for rescuing financial institutions. Finally, the paper will focus its attention on how geopolitics influences these relationships between the state, its citizens and finance.

The myth of markets without states

Since the crisis, laissez-faire capitalism has fallen off its pedestal; the need for states to step in further highlighted the fact 'that states were necessarily involved in financial operations' (Moran and Payne, 2014: 337). In reality, prior to the crisis states were also closely engaged. The financial sector has always operated in close collaboration with states, even if the latter could be subject to a level regulatory capture: 'financial markets are not autonomous or natural, given that they always operate in a political context' (Carruthers and Kim, 2011: 244). Despite the evident influence of state (and political) involvement in financial markets, however, the dichotomy between finance and the state, with finance as an uncontrollable and faceless system, is prevalent. In the words of Lehman Brothers' last CEO, Dick Fuld (2008), for example, the 2007/2008 financial crisis was a financial tsunami – like a big storm, beyond the prevention capacity of mere mortals. Equally, politicians portrayed this image. In the direct aftermath of the crisis, the United Kingdom's then Prime Minister, Gordon Brown, said, 'this is an international economic hurricane sweeping the world and lashing our country' (Porter, 2009). While during the French 2012 presidential campaign, the current French president, François Hollande, referred to the world of finance as a faceless government (Rachman, 2012).

[1] State is used in a rather simplified manner and includes also the political spectrum. In reality state tends not to be a singular entity. Instead, most states are characterized by different competing forces, both in the everyday operations and in the political domain deciding over the state's priorities. For the analysis of the relationships between the state, its citizens and finance, however, it is sufficient to look at the dominant directions of the state and, thus, define the state (and the political domain related to it) as a singular entity representing these directions.

The dichotomy between an autonomous finance (and economics) and the state (and politics) originates, to a large extent, in longer discussion about modern finance as detached from, and overarching, other societal spheres. With modernity the conception of the economy as separate from other societal spheres was born, also resulted in the pervasive influence of markets on society. Karl Polanyi (1957) is renowned for voicing concerns about the separate but dominant position of economics and financial markets over society. He, however, also explicitly argued that this did not happen autonomously from politics. Yet, how the political spectrum and finance are interwoven receives surprisingly little attention. In many (mainstream) economic accounts political considerations hardly play a role. Accordingly, the role of the state tends to be obscured. Or states are presented as subdued to the powers of finance, with financial sectors capturing the state through their lobby efforts (e.g., Igan, Mishra and Tressel, 2009). There is little doubt that lobbying played and continuous to play a significant role, yet it portrays a picture of states as passive bystanders. Matthias Thiemann (2014: 1209) illustrates that cognitive capture as the cause for regulatory lenience prior to the crisis can hardly account for a uniform global lack of regulation of securitization activities. Instead, states are actively involved in the workings and directions of finance.

In *The Making of Global Empire: The Political Economy of American Empire* (2012), Leo Panitch and Sam Gindin illustrate the close collaboration between the (Unites States) state and its financial sector. They argue that the (powerful) narrative of states versus the markets is a false dichotomy. On the contrary, with the development of capitalism 'states in fact became more involved in economic life than ever, especially in the establishment and administration of the juridical, regulatory, and infrastructural framework in which private property, competition, and contracts came to operate' (Panitch and Gindin, 2012: 3). Besides, states also acted increasingly as lender of last resort in order to contain capitalist crisis. According to Piergiorgio Allesandri and Andrew Haldane of the Bank of England, the relationship between the state and finance has actually been reversed the last two centuries. Initially sovereign debt defaults were the biggest cause of banking collapse. Today, however, '[t]he state has instead become the last-resort financier of the banks. As with the state, the banks' needs have typically been greatest at times of financial crisis. And like the states, last-resort financing has not always been repaid in full and on time' (Allesandri and Haldane, 2009: 1). The example of Lehman Brothers is interesting in this respective, as the state did not act as lender of last resort to save the bank, this 'creating the largest bankruptcy in American history' (Davis, 2009 130–1). In a twist of faith, however, the global chain reaction this triggered may now actually serve as an example for many governments to prevent, at all (social) costs, large and systemic financial institutions to collapse.

Close collaborations between the states and their financial sectors are not a characteristic of the Unites States only, but also of, for example, the United Kingdom, Ireland and mainland Europe (e.g., Ahamed, 2014; Bell and Hindmoor, 2014; Woll, 2014). Notwithstanding, the United States are a dominant force, where all the trend-setting developments originated (Streeck, 2014: xii), and with a strong ideological narrative that the state and markets are separate entities. For example, the frequently voiced rhetoric that 'government is not the solution, government is the problem' was the loudest in the United States, even though it paints a false picture: neoliberalism may be understood in terms of the expansion and deepening of markets and competitive pressure, but it 'was essentially a *political* response to the democratic gains that had been previously achieved by working classes and which had become, from capital's perspective, barriers to accumulation' (Panitch and Gindin, 2012: 15).

In reality, the state has not withdrawn from the financial and economic domains.[2] The concept of the state and markets as separate entities may serve as useful abstraction, according to Geoffrey Underhill, but '[t]hey are part of the same integrated ensemble of governance, a state–market *condominium'* (Underhill, 2000: 129). Also, because 'states became increasingly dependent on the success of capital accumulation for tax revenue and popular legitimacy' (Panitch and Gindin, 2012: 3). It is debatable, however, to what extent the US, and also other states, had an explicit strategy in pushing a neoliberal agenda, expanding their financial sector and/or reinforcing financialization, i.e. the broad-based transformation in which profit making in the economy occurs increasingly through financial channels rather than through productive channels.

The course of events

Greta R. Krippner (2011: 3) remarks, '… financialization was not a deliberate outcome sought by policymakers but rather an inadvertent result of the [US] state's attempts to solve other problems. She supports Polanyi's dictum that 'laissez-faire was planned', as 'freeing' the markets required active state intervention. Yet, her insightful analysis shows that even though the state was absolutely central, financialization 'was subject to trial and error, and not nearly as seamless as it has sometimes been presented' (Krippner, 2011: 3). Hence, it is important to bear in mind that the relationships between states and finance are complex, can be contradictory, and are to a large extent the results of *bricolage*. With respect to the belief that certain scientific formulas and models were unilaterally adapted in the finance sector, for example, Ewald Engelen et al. (2011a) show that practices and regulation were constantly changing and grafted on existing knowledge and regulation:

> For [Claude] Levi-Strauss, bricolage is a 'parallel mode of acquiring knowledge' (1966: 13) and involves 'build[ing] up structures by fitting together events, or rather the remains of events, while science, "in operation" simply by virtue coming into being, creates its means and results in the form of events, thanks to the structures which it is constantly elaborating and which are its hypothesis and theories' (Levi-Strauss 1966: 22). (Engelen et al., 2011a: 51).

Reality turns out to be much less straightforward than is often presented. Government practices and interventions, but also innovation originating in financial markets, tend not to be the product of engineering or a rationalist grand plan, but much more the creative and resourceful use of materials at hand, regardless of their original purposes. Changes and innovations such as the repeal of Glass-Steagall Act and Basel II are illustrative of this process (Engelen et al., 2011a: 51-52). In other words, new regulatory principles are frequently created out of the materials at hand instead of solely originating in rational scientific knowledge.

Evidently, the growth of national financial sectors and of global finance could not have been possible without explicit and implicit state interventions and support, even though states – and their regulatory apparatus – could not prevent crises from happening. As Panitch and Gindin argue in another publication, state institutions were not necessarily unaware of the potential dangers: '[already in 1987, the New York Federal Reserve] saw what was happening in

[2] Apart from the driving force behind the expansion of global finance, the central role of the Unites States was also 'closely related to, and augmented by, the growing international predominance of American corporations' (Panitch and Gindin 2012: 112).

financial markets as a double-edged sword, expanding the range and cheapening the costs of financial transactions while at the same time producing such a massive increase in market volatility as to make financial crises more likely' (Panitch and Gindin, 2014: 381). Despite close involvement, many activities in modern finance seem to have been beyond the scope of the state to exercise effective control. When it spirals out of control, though, it becomes increasingly difficult for states to take their hands off:

> The "moral hazard" tightrope that the state had to walk in this respect was nothing compared with the practical hazard involved in figuring out whether allowing even a small bank to collapse might have systemic effects [...] in May 1984, with "the liquidity of the whole banking system" at stake according to the Treasury, the most ideologically free-market-oriented Republican administration since the 1920s nationalized the bank and bailed out its creditors. It was when the Treasury's comptroller made it clear during Congressional hearings on Continental Illinois that the uninsured creditors of the eleven largest US commercial banks would be treated in the same fashion that the term "too big to fail" came into widespread usage (Panitch and Gindin, 2012: 179).

The 2007/2008 crisis illustrated that the TBTF issue had not but been solved. Up till today it remains a pressing concern. In July 2014, the Brussels based think-thank Breugel organized a seminar in which regulators, bankers and other concerned parties discussed the latest developments aimed at solving the TBTF issue. Notwithstanding concerns about the social costs rescuing insolvent banks may entail, all current regulatory proposals focus on technical fixes in the structures of banks, their shareholders, asset categories, and so forth. There seems little political pressure to actually decrease the size of banks. On the contrary, banks, in the US particularly, have increased in size after the crisis – or as Peter Boone and Simon Johnson state (2010: 248), the bailouts and bust amounts form an implicit taxpayer subsidy that encourages individual institutions to become larger and, as a result, the whole system to swell. If relying on regulators' historical track record, this seems to offer little relief for taxpayers. Prior to the crisis it was assumed by regulators that TBTF was solved because of regulatory measures like capital-adequacy standards and quick interventions. Regulators, moreover, believed that two prominent financial innovations encouraged by the US Treasury Department, securitization and derivative markets, had led to a 'renewed focus on responsibility and discipline in finance' (Panitch and Gindin, 2012: 266). It could not have been further from the truth, as we now know.

Current regulations targeting financial institutions leverage-ratio also provide little hope that states will not to have to act as lenders of last resort again. Financial institutions' capital requirements remain extremely low (Finance Watch, 2014: 5) and need to be simpler and more robust to avoid large banks from gaming the rules (Pagano, 2014). Anat R. Admati and Martin Hellwig's (2013) widely cited work, moreover, undermines the financial sector narrative for maintaining low capital requirements, in particular by debunking the argument that more capital means that borrowing money becomes more expensive. With regards to this paper, it is in particular about how the leverage-ratio may affect the wholesale funding that the interbank lending financial institutions to a large extent rely on. Uncertainty about each other's balance sheets, as the 2007/2008 financial crisis demonstrated, quickly halts the operations of the largest (systemic) banks. The next crisis will actually demonstrate whether financial institutions can maintain the argument that current requirements are sufficient or, more likely, whether they also go against their own arguments and quickly become suspicious about their counterparts potential to remain solvent. In the latter case, it is highly likely that states will have to step in as lenders of last resort again. In other words, implicit state subsidies seem not to have ended once and for all: '[e]ven with systemic risk reduced, the state is unlikely to be able to credibly to stand aside when future tail risks eventuate, as they are sure to do' (Allesandri and Haldane, 2009: 16).

States and their citizens

Perceptions about the state and its supposed and actual functioning are varied, yet as the previous section has illustrated the intimate relationships between the state and finance are often ignored. It does not fit well with the dichotomy between the state and finance (or the private sector as a whole), which is particularly prevalent in dominant neoliberal discourses. What is more, even when they have intimate knowledge about the contrary some of neoliberal's most ardent supporters uphold the image. William E. Simon, who was the US Treasury Secretary from 1974 to 1977, perfectly illustrates this. Simon, who had been successful as a bond dealer at Salomon Brothers before he joined the US government, '[may have] expounded neoliberal nostrums about the need for a small state more loudly than anyone else, but he was fully aware how intertwined were Wall Street and "big government" [due to his previous work at Salomon Brothers, which was highly active in trading government bonds]' (Panitch and Gindin, 2012: 146).

In the realities of the triangular relationships between the (democratic) state, the financial sector, and the state's citizens (or taxpayers), close ties between finance and the state may affect the third party, the citizenry. The 2007/2008 financial crisis is illustrative of the quick pace in which state interventions turned into democratic liabilities. Many ordinary citizens have been burdened with the social and economic costs of the crisis, while they are by and large of the opinion that they are not responsible for the crisis. Instead, as countless media reports have shown, it is commonly believed that irresponsible behaviour of bankers and other financial professionals caused the crisis.[3] Accordingly, (political) responses to the crisis are presented as minimizing the social fallout of future crises, with politicians taking turns in criticizing bankers and the like – for their greed, irresponsibility, lack of empathy, arrogance, and so forth (e.g, Hall and Daneshkhu, 2009; Beattie, Ward and Guha, 2009). While there is probably a grain of truth in these accusations, it distorts the picture of the state's role.

Democratic states tend to portray themselves as defenders of the rights and positions of their citizens. Most (financial) state support to financial institutions has been framed with regards to the economic consequences, with the economy being synonym for society's prosperity. TARP and other state interventions have been presented as rescue operations aimed at containing the social consequences of faltering financial sectors. As shown, some are of the opinion that the interventions were rather successful, while also the international collaboration between governments has been praised (e.g., Drezner, 2014). In a number of cases governments may have recouped their financial aid and there was certainly a level of international collaboration. In other cases, in particular with regard to the nationalization of banks in Europe, it remains to be seen whether governments will be able to recoup the full amount. In case they will not succeed, the bill will have to be paid for by the taxpayers. Equally, rising unemployment and austerity measures as a result of the financial crisis have hit large segments of the American and European populations. Governments seek to reduce costs by economizing on their

[3] See also the documentary *Inside Job: How Bankers Caused the Financial Crisis* (2010).

expenditures on, to name a few, medical care, old-age care, army staff and equipment, and public services more generally. These measures are politically justified by the argument that it reduces the costs for national constituencies. We should certainly not trivialize high government debts, yet it is debateable whether austerity measures are really intended to minimize the costs for (future generations of) national citizens.

Governments publicly maintain the image of putting their citizens first. As a result a distorted picture of what is really going on is maintained, thereby limiting any fundamental discussion about the relationships between the state, its citizens and finance. The focus is predominantly on technical fixes of the system as the solution 'to reduce system complexities and introduce redundancies to make the financial system more robust' (Engelen et al., 2011b: 5), with finance presented as a neutral domain operating outside of the realm of the state and politics.

A major problem with a strong focus on technical fixes is that they obscure the political balancing between the interests of (international) finance and of (national) citizens. Wolfgang Streeck, in his book *Buying Time: The Delayed Crisis of Democratic Capitalism* (2014), captures the actual situation by distinguishing between *Staatsvolk* and *Marktvolk*: the 'general citizenry' and the 'people of the market'. Apart from that one (*Staatsvolk*) is nationally organized and the other (*Marktvolk*) organized internationally, there is a substantial difference in the claims both groups can make on the state. Increasing influence of the *Marktvolk* relates, according to Streeck (2014: 80–90), to the increase in sovereign debt – the debt state. While in democratic states, the *Staatsvolk*, can express their will in periodic elections, the power and influence of the *Marktvolk* comes through their role of creditors to the state: 'as creditors, they cannot vote out a government that is not to their liking; they can, however, sell off their existing bonds or refrain from participating in a new auction of public debt' (Streeck, 2014: 81) – moreover, they have a substantial influence over setting the interests rates for sovereign debt. It is telling that after every presentation of new plans that lay out solutions to the Eurozone's sovereign debt crisis, politicians often anxiously awaited the reactions of the financial markets.

Streeck illustrates the tensions between these two groups; in particular how states balance between the interests of the two sides. He is clear, however, about which side the state favours:

> As far as creditors are concerned, they need to ensure that any future 'haircut' will affect not them but, for example, pensioners and clients of national health care systems – in other words, that governments exercise sovereignty only over their *Staatsvolk*, not their *Marktvolk*. If we think of the discussions of recent years, we can see that this principle is now already taken for granted: it is a commonplace across the political spectrum that 'the markets' must not be 'unsettled' at any costs, whereas the unsettling of citizens-as-pensioners or citizens-as-patients has to be accepted in the name of the public good (Streeck, 2014: 86–7).

The concealed reality, then, is that managing public finances is much more a response to financial markets than to the national citizenry, even though the latter may ultimately be the one feeling the consequences. As Cornelia Woll (2014) shows, it is not a one size fits all, as some states are more successful (France in her case) in engaging large financial institution in mutual rescue operations – and thus in limiting the burden for the taxpayer. Notwithstanding, Streeck is of the opinion that states do too little to serve their citizens, the *Staatsvolk*:

'Nowhere is it written that [states] can use their sovereign powers only to meet their obligations to finance markets, by increasing taxes or decreasing benefits for their citizens. The first obligation of democracies is to their citizens; they can make laws and dissolve contracts; anyone who lends them money can and must know that' (Streeck, 2014: 162). Yet, relatively few states have so far considered this a viable option. As the next section illustrates, this seems to a large extent the result of geopolitical considerations.

Geopolitical concerns

As already said, state institutions are aware of the dilemmas they face: '[t]he unresolved dilemma for all capitalist states today is how to both stimulate the economy and regulate financial markets so as to limit increasingly dangerous volatility without undermining the ability of finance to play its essential role in global capitalism' (Panitch and Gindin, 2012: 333). They have, in other words, to seek a good balance between how to best manage the (national) economy for society to prosper and how to facilitate (global) finance. This also is by and large a matter of geopolitics, as states tend to favour finance over their citizenry due to the role financial markets play in the current world order. Surprisingly, however, there is relatively little research looking at how these aspects interact and interrelate – and, thus, how it helps to understand the continuing potential for taxpayers to have to pay the costs of future rescue operations.

The Great Depression and two world wars negatively affected the legitimacy and growth of the financial sector and 'not until after 1985 did the international financial markets re-emerge as a major factor' (Sassen, 2005: 21). Today the financial system can arguably be considered a global system (Knorr Cetina and Preda, 2005: 5). *Finanscapes*, the flow of large quantities of capital at blinding speed over the globe (Appadurai, 1990), have shaped a truly interconnected global grid. With it the financial service sector has increased in size, complexity and, especially, centrality in the operations of the world economy. States learned by doing how this affected their room for manoeuvre, as the Herstatt crisis in (then still) West Germany illustrates. To avoid 'moral hazard', its central bank, the Bundesbank, had allowed Bankhaus I.D. Herstatt of Cologne, one of the country's largest private banks, to collapse in 1974. The central bank was forced to reconsider its stance, however, this marking a turning point:

> It was the Bundesbank that was taught a lesson in the internationalization of the state. By the end of the year it had agreed to assume responsibility for paying off Herstatt's creditors, giving foreign banks preference over German banks and corporations. More broadly, it was drawn into supporting the US position that "a firms and explicit commitment must be given to the marketplace that central banks would provide lender-of-last-resort to banks operating in the Euromarkets" (Panitch and Gindin, 2012: 153–4)

Finance, it shows, was gaining prominence over democratic decision-making processes. Streeck refers to it as a transition from a Keynesian to Hayekian political economy. States, though sovereign in theory, have to pursue policies and regulation in accordance with dominant economic beliefs about efficiency theory, while in the past they had much wider range of instruments for discretionary government intervention (Streeck, 2014: 110). The accompanying shift to a debt state largely contributes to this since states have to rely on the confidence of financial markets for the (re)financing of their sovereign debt. This, according to

Streeck, comes at a cost for the citizenry. In the aftermath of the latest financial crisis, for example, governments impose harsh austerity measures on themselves and their citizens '[t]o regain the "confidence" of "the markets"' (Streeck, 2014: 9).

It could be argued that finance, or capital more generally, has gained an ever more stronger influence over the state, to the extent that it seems that finance keeps the state hostage. It is assumed that capital is highly mobile and that if states do not respect the conditions set by financial markets, the capital would move elsewhere. Austerity measures certainly confirm this, as one of the main incentives for governments to strictly control their budgets is that more favourable credit ratings lower the borrowing costs. One could claim this is to the advantage of the taxpaying citizenry as the state is trying to control its sovereign debt and pay the least interests on this debt possible. The citizenry may nevertheless suffer the consequences of austerity measures. These measures, moreover, are by and large the result of a particular approach of states towards finance; namely, allowing finance to becoming increasingly more important and difficult to curtail once it fails. In the case of the United Kingdom, for example, bank balance sheets increased significantly since the early 1970s: 'By the start of this century, bank balance sheets were more than five times annual UK GDP. In the space of a generation, the insurable interests of the state had risen tenfold' (Allesandri and Haldane, 2009: 3).

The increasing importance of finance was an interaction between the state and finance, and as illustrated above could not have occurred without the active participation of states. In all cases the spread and spatial expansion of financial markets happened in close collaboration with the state. They provided legislative and administrative changes, coordinated with other states and signed treaties to accompany the extending of markets: 'The more capital became internationalized, the more states became concerned to fashion regulatory regimes oriented to facilitating the rapid growth of international trade and foreign investment' (Panitch and Gindin, 2012: 223). In a way, finance has become the new 'benign' driver for geopolitical struggles in the sense that it is geopolitics without armies. The image of geopolitics as physically fighting over territory and resources, which certainly remains prevalent, has to a large extent been overtaken by geopolitical concerns about how to please and use global finance to one's advantage; compared to Susan Strange's 1988 analysis about power in the world economy, finance has even become more significant (see for a reflection on her analysis of the state and finance also Underhill 2000). This favours, with regard to Streeck, the international position of the *Marktvolk* – equally reflected in Thomas Piketty's (2014) observation of increasing inequality.[4] Owing to international competition between states, states seem to favour finance over their citizenry. By and large, the citizenry is immobile, while finance is not. Geopolitically, one can compete in attracting large and internationally operating financial institutions. Competing over who offers their taxpayers the best guarantees may win votes domestically, yet it does very little internationally. The latest financial crisis illustrates this.

[4] It is argued that, especially in the last decade (with, for example, the economic development of the BRICS), global finance has decreased inequality between states. Within states, however, inequality is on the rise as a result of the globalization of finance.

2007/2008 financial crisis

To minimize the consequences, an urgency to address the problems internationally was prevalent in the immediate aftermath of the 2007/2008 financial crisis. Governments worked overtime to mitigate the economic costs and to draft new regulation to prevent the same from happening again. The financial sector also has not sat around idly. On the one hand, banks and other financial institutions have closely collaborated with the government. Many banks have realized that a stronger and healthier financial system would be in their advantage, as also the European Banking Authority (2014: 34) acknowledges. Nor should the impact of reputational risk be neglected since financial institutions have much to regain after the crisis spurred an increase in loss of confidence among the public. On the other hand, financial institutions have tried to influence the directions of new regulations by (openly) objecting to stricter rules. JP Morgan Chase's CEO Jamie Dimon, for example, said in 2011 that new global bank rules would be 'anti-American' and that the United States should consider pulling out of the international negotiations (Liberto, 2011). On many other occasions, financiers equally shared their dislike and, for example, threatened to depart from the City when rules would become too restricting (e.g., Barty, 2009; Mackintosh, Parker and Tait, 2009; Jenkins and Burgess, 2010). Notwithstanding outcries from financiers, however, states have so far hardly threatened the existing financial model. This may be blamed partly on regulatory capture. Placing a limit on the size of the financial sector has been suggested: 'It makes little sense for larger or mid-sized economies like the U.K., Switzerland, and the U.S. to be deriving 20 percent or so of their GNP from financial sector activities, when finance, like law and accounting, should be about facilitating economic investment, not being the investment itself' (Warwick, 2009: 7). Yet, when deconstructing states' geopolitical concerns it needs to be questioned whether 'it makes little sense' to maintain large financial sectors.

International negotiations aimed to establish a unified regulatory approach, are illustrative of the role of geopolitical concerns. There is a strong argument to be made that states have learned from the past, as they certainly see the value of international collaboration in the mitigation of the economic consequences of the crisis. At the same time, though, if it were not for national interests it would probably be much easier to design stricter global regulation. Diverging interests seem to have prevented full international collaboration, notwithstanding that is a matter of perception to what extent global coordination has been successful.[5] The G20, for example, has produced little in the way of co-ordinated action (Tett, 2010a). Neither, however, have national regulatory apparatuses really contained the size and influence of their respective financial sectors. For example, to little avail '[m]any expected the Great Recession to be followed by a new New Deal' (Davis, 2009: vi). The Dodd-Frank Wall Street Reform and Consumer Protection Act may be an impressive piece of legislation, but it is doubtful whether it will significantly change the balance between the state, finance and its citizens. Equally, sustained efforts within the European Union seem to have hardly changed the balance even though systemic risk, like in the United States, may have been reduced.

The lack of international success can partly be contributed to the fact that the defence of national interests quickly resurfaced in the aftermath of the crisis – which is not to say that international coordination does no longer play a role, nor that it has not been improved, in particular in comparison to the 1929 crash. United States regulatory responses, though

[5] Allan Beatle, in his 17 August 2014 review of Daniel W. Drezner's *The System Worked: How the World Stopped Another Great Depression*, disagrees, for example, with the analysis of how successful international collaboration was, even if he praises the author for his detailed knowledge (retrieved from www.ft.com).

certainly informed by international negotiations, shows the Unites States' tendency to unilaterally draft regulatory principles (e.g., Persaud, 2010). European officials, conversely, have been reluctant to import 'made in America' ideas, which exposes transatlantic differences (Tett, 2010b). It should be noted that these differences are not informed by geopolitical concerns only, as political and cultural traditions equally inform ideas about how to establish a robust financial system and minimize future social costs. Within Europe, however, opposing national interests clearly limit coordinated efforts to regulate finance, in particular between the United Kingdom (and its City) and continental Europe. France, for example, has been accused of trying to take advantage of the United Kingdom (Betts, 2009). While London is urged to stand up against Brussels out of fear that new European regulation will put the City at a disadvantage (Barker, 2011). Demands for a referendum about the United Kingdom's membership to the European Union seem to partly originate in conflicts over financial regulation, though ironically it has recently been suggested that a departure may actually harm the position of the City (Arnold and Fleming, 2014).

The United Kingdom's current geopolitical position relies predominantly on the global significance of the City and, thus, the United Kingdom has an interest to maintain it as one of the world's strongest global financial centres. Owing to the size of the United States' economy, New York may remain an attractive financial centre even if the United States would more strictly regulate their financial institutions. In the United States there also appears little interest in decreasing the size of its banks and/or financial sector. Also in the context of geopolitical struggles with the economic powerhouse China, it is highly unlikely that the United States will allow its banks to be substantially smaller than the Chinese ones. The implicit logic: large banks and/or financial sectors give them global advantages – 'the largest banks … have not been broken up because of fears that doing so would fatally undermine New York's and London's status as global trading centres' (Bell and Hindmoor, 2014: 360).[6] The latest conflict between the United States, the European Union and Russia over the Ukraine illustrates that states controlling global financial centres have an edge. With sovereign control over these centres you are able to block, control and survey financial flows. This indicates that states have a large potential to interfere in financial markets when they please to do so. Without doubt the boycott of Russia is circumvented, yet there appears to have been relatively little objections from the financial sector. In other words, states have many more tools at their disposal to force their will upon finance than they would like their citizens to believe.

States with significantly smaller financial sectors, due to the absence of the world's financial centres in their sovereign territory, appear to equally let geopolitical considerations influence their approaches towards their respective financial sectors. Germany, in comparison with the United Kingdom, has a much stronger industrial sector. Hence, Germany would remain economically (and geopolitically) influential even without a smaller financial sector. By forcing Deutsche Bank to become smaller, however, Germany would no longer host one of the world's largest banks. Equally, smaller states like Switzerland and the Netherlands seem to put relatively little effort in downsizing their financial institutions and/or sectors to levels that no longer requires the need for rescue operations in the case they fail.[7] Here, the narrative of

[6] International competition over tax treaties and favourable investment climates seem to a certain extent to be influenced by similar geopolitical concerns.
[7] Nicolas Véron, from the Brussels based think-tank Bruegel, for example, refers to the fact that even in the integrated European market there were incentives for banking nationalism and the support of domestic banks at the expense of financial stability and prudence (see the UK's 2014 House of Lord's inquiry on *Review of the EU Financial Regulation Framework*).

perceiving Europe, and to a lesser extent the United States, as the losers of the 2007/2008 financial crisis is of relevance. On the one hand, the more prominent role given to the G20 confirms this trend. On the other hand, the Unites States remain dominant despite the predications. And although the European Union is another story, it is equally questionable to what extent we witness a decline. This is not to say that crises cannot spell the end of certain regimes. Yet, in the current geopolitical constellation one way of preventing this from happening seems to maintain a strong financial sector and/or large financial institutes; fearing the increasing prominence of Asia may only further reinforce this. A relatively strong financial sector can serve as leverage in geopolitical struggles, while it also helps to maintain sovereign control over national and international financial flows. It may come at a cost, however, to the taxpaying citizenry and, in Europe in particular, to the welfare state. Europe, then, may not necessarily lose out as a result of the crisis, but their citizens may certainly have to pick up the bill again when the next crisis hits.

Concluding remarks

In order to maintain geopolitical power it can be argued that, in the triangular relationships, the state tends to favour finance over their (taxpaying) citizens. Or so it seems, because it is difficult to present unambiguous conclusions about the costs and benefits of geopolitical concerns. It certainly appears that the potential costs for taxpayers have all but been solved. Yet, there may also be financial benefits to maintaining geopolitical power. In conclusion of the analysis presented in this paper, three considerations are of particular concern.

First, judging from the evidence presented in this paper, states play a crucial role in the organization and maintenance of (global) finance; hence, the opposition between the state and finance is, in the words of Panitch and Gindin, a false dichotomy. Much remains unknown about the everyday realities of the operations of states, however, in particular about how state employees and institutions perceive their roles. Boone and Johnson (2010) partly blame the absence of stricter regulation on the logics of the political system, for example. Politicians, they argue, like looser regulation, because it may generate a credit boom. This may serve them when in power, while the troubles generally come later. This implies that you have to be of a strong character to be strict in times of prosperity. As a result, fundamental underlying problems in the financial system are not systematically addressed because 'the long-standing and repeated failure of regulation to financial collapses reflects deep political and operational difficulties in creating regulation for modern finance' (Boone and Johnson, 2010: 253). Following up on the concept of *bricolage*, moreover, governments, regulators, and politicians have to deal with what is at hand. Most likely, state officials and politicians do not have well-thought strategic considerations to favour finance at all costs and/or to perceive taxpayers only as tools in their geopolitical aspirations. Yet, fine-grained details about whether they explicitly discuss trade-offs remain absent; '[t]he conflict between the two stakeholder groups competing with each other for control of the democratic debt state is a new, developing and as yet hardly understood phenomenon' (Streeck, 2014: 84).

Also, there are not necessarily two clear-cut opposing blocks. On the side of the financial sector, (sovereign) bond traders, merger and acquisition bankers, analysts, institutional investors, sovereign funds, and hedge fund managers – with often different national backgrounds and a variety of geographical locations – do not necessarily have the same goals. Moreover, business interests may also differ between the financial sector and big business, even though they are strongly intertwined (e.g., Ouroussoff, 2010; Pagliari and

Young, 2014). The side of the citizenry is equally not a unified block, let alone that one can easily determine who profits and who does not from the increasing dominance of finance:

> The Occupy movement suggests that it is 1 per cent against 99 per cent. However, while it is possible to make some distinctions between the various constituencies and projects concerning the regulation of finance, there are challenges to identifying a simple division between the beneficiaries and losers of finance. The process of financialization has implications for the nature of the constituencies engaged in political processes, in some instances blurring boundaries between what might have been distinct categories of supporters and opponents of finances capital and its political projects (Walby, 2013: 502–3).

Scholars from a variety of disciplinary backgrounds, such as economics, political sciences, sociology, and anthropology, could help to further our understanding of how states perceive their relationships with finance and their citizens. This will help to enhance our knowledge on why differences and similarities between narratives and practices in defence of the taxpaying citizenry may occur.

Second, can it be calculated to what extent ordinary citizens benefit financially from the maintenance of large financial sectors? States and their political representatives may believe that remaining geopolitically significant is the best approach in the defence of their national economic (and social) interests. This begs the question whether geopolitical considerations – and the defence of finance, with all the implicit subsidies that come with it – are economically beneficial to their (taxpaying) citizenry or not? It is probably difficult to get a straightforward answer, yet it is a question that needs critical engagement since states evidently pursue the belief that there are (economic) advantages to supporting their national financial institutions and sectors. Notwithstanding, and resonating the first consideration, state officials have to maintain a precarious balance between defending the state's particular interests and not diverting too much from what is done internationally. After all, states may favour a (too) large financial sector, yet they cannot afford for their financial institutes to have a higher risk of collapsing than those of other states, as this could harm their competitive edge and geopolitical position. Furthermore, what if power more than economic concerns drives geopolitical struggles (and their related support for financial sectors)? It may even happen that national citizenries, out of nationalistic pride, defend politicians and state representatives who will not bow to international pressure, even if the result is that these politicians defend the national interests of their respective financial sectors more than that they push for a financial sector that may be smaller, more boring, less internationally important, yet demonstrable more sustainable for the citizenries' prosperity.

Finally, then, even if there is room for improving the current balance, how likely is a major regulatory overhaul? Panitch and Gindin, for example, are not very optimistic about the potential for this to happen. They point to the gap between revolutionary spirits, such as manifested by the Occupy movements, and the realities of capitalism. According to them, it is not possible to change the world without taking power:

> Whether called socialism or not, today's revived demands for social justice and genuine democracy could only be realized through such a fundamental shift of political power, entailing fundamental change in state as well as class structures. This would need to begin with turning the financial institutions that

> are the life-blood of global capitalism into pure utilities that would facilitate, within each state, the democratization of decisions that govern investment and employment. But very different movements and parties from those that carried the socialist impulse in the previous century would be necessary to see this through (Panitch and Gindin, 2012: 340).

They may be right, though it is not set in stone what directions financial regulation will take. As with the process of financialization that Krippner (2011) refers to, it is also a matter of trial and error. Openly asking fundamental questions about what kind of relationships between the state, its (taxpaying) citizenry and finance 'guarantees' most prosperity to the majority of the citizenry should be part of it. The crisis, after all, was not a natural disaster. Instead, states contributed to the present form of the global financial system. If desired, then, they can also help to change it for the better.

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SUGGESTED CITATION: Tijo Salverda, "Who does the state work for? Geopolitical considerations in the organization of (global) finance", *real-world economics review*, issue no. 71, 28 May 2015, pp. 124-139, http://www.paecon.net/PAEReview/issue71/Salverda71.pdf

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ISSN 1755-9472

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