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Limits to Investment: Finance in the Anthropocene

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The true nature of the international system under which we were living was not realized until it failed.
Karl Polanyi

A transition to a sustainable economy requires not only population stabilization, breakthroughs in resource productivity, and checks on material consumption, but also constraints on aggregate investment. Built into the DNA of finance is the goal of optimizing relatively short-term returns on investment, which, when successful, induces exponential growth in the aggregate stock of financial capital. When that expanding stock of financial capital is then reinvested, it spurs ever-increasing demands for natural resources and pressure on waste sinks. The contradiction between the finite scale of the biosphere and the endless growth of finance capital will be resolved either through crisis or, as advocated here, through foresight and remedial action. Shifting the economic system demands a fundamental transformation of finance, at least for the real investment decisions of the largest actors in the economy. We must view this profound shift as a critical national and global security priority that will require unprecedented intervention by governing institutions on the public's behalf.

Context

The egregious offenses of modern finance need little elaboration. The finance-induced Great Recession—still a depression in parts of the European Union—has been causing oppressive pain and suffering, with multi-generational consequences, including increased wealth inequality, cascading throughout the global economy. If we can peer beyond the human wreckage, we may glimpse a silver lining: the lingering economic crisis has provided even mainstream economists a reason to question as never before the very foundations of our finance-driven economic system. Just as dangerous as rogue banks too big to fail or to govern—and the predatory casino finance that has become their stock-in-trade—is the growth imperative that drives the modern economy beyond the resource and waste sink limits of the biosphere.

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Finance's most important practical functions in the real economy are the transformation of savings into investment and the credit creation process of the banking system. The reorientation of the flow of real investment (not to be confused with financial asset speculation) is the bridge to, and the steering mechanism for, a Great Transition to an economy that serves people while respecting the ecosphere's physical limits. For now though, the same planetary boundaries that dictate limits to growth also imply limits to investment, since investment fuels growth. No economic system in the history of civilization has ever had to contemplate such a constraint. How much and where large economic actors like multinational corporations and nation-states invest will significantly determine the quality of the economic system of the future and, given present social and ecological stresses, our collective well-being and global security. As a consequence, real investment choices must become a central concern of global governance, notwithstanding the many failings of governing institutions.

The Impact of Investment

The economy, as measured by Gross National Product (GNP), includes consumption, investment, government spending, and net exports, often rendered as a simple equation:

$$GNP = C + I + G + netX$$

Concern for sustainability has typically focused on consumption since it represents the largest share of the economy (70 percent in the US, less in emerging economies like China and India). However, capital investment has a disproportionately large impact because of the long-term implications it has on future consumption through "technology lock-in" and the embedded feedback loops of business enterprise. For example, if an automobile company constructs a factory to build SUVs, then its advertising and sales efforts will focus on increasing the demand for these SUVs.

Distinguishing between financial investment and real investment is critically important. The former has attracted considerable attention in the investment community: witness the debates about the impact of "SRI" (socially responsible investment) and related "ESG" factors (environmental, social, and governance) on corporate behavior and investment performance. Yet financial investors and speculators—groups that increasingly blur together—are typically far removed from the real capital investment decisions of the large public corporations that, to a significant extent, drive and shape the material economy. Even some leading practitioners of ESG and sustainable investment acknowledge that ESG is primarily a risk mitigation strategy for financial investment portfolios, rather than a transformational strategy for the real economy.[1]

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The top 1,000 global corporations represent half of the total market value of the world's 60,000 public companies and, undoubtedly, an even greater share of capital investment budgets.[2] What demands our attention, therefore, are the decades-long impacts of the capital expenditure decisions of these largest corporations, together with the impacts of large government capital expenditures like investments in infrastructure. Corporate reporting on social and environmental performance, however, tends to focus on supply chain impacts rather than the initiating impact of the capital expenditures that create these supply chains. To take one of the world's largest corporations as an example, Walmart's continued investment in new superstores matters much more than its subsequent efforts to green its supply chain, notwithstanding the importance of that work.

Shareholder engagement that focuses on capital investment decisions will inevitably confront pushback rooted in concerns about long-term growth, competitiveness, and share price. Corporations make their investment decisions using an internal rate of return framework that compares a project's expected financial return with the firm's cost of capital. Because of the way finance discounts the future, corporations approve capital expenditures that achieve financial return targets with time horizons that rarely exceed ten years and typically ignore "externalities," including those with serious long-term risks. Concerns about the systemic impact on social and natural capital rarely enter the analysis. They are "managed" afterward, if at all. This short-termism is compounded by the even shorter-term horizon of financial investors and speculators preoccupied with quarterly earnings and higher valuations in the stock market

Policy responses, moreover, rarely occur until after enterprise investment decisions have already been made. A company is free to build a cigarette industry, and only afterwards does society respond with labeling and advertising policies that, at best, partially mitigate the damage. Today, unprecedented ecological risks make this reactive approach unacceptable. Many forward-thinking CEOs and policymakers fully understand this new reality yet feel powerless to change it.

From the Firm to the System

An adequate response to the challenge of a world at risk requires turning from the firm-level investment decisions to the economic system as a whole.[3] Along with genuine contributions to human progress, our economic system has produced staggering growth in financial wealth. Financial assets in the US have doubled as a percentage of GDP since 1980.[4] This should give us pause, rather than reason for celebration.

The drive for exponential returns on financial capital pushed finance to shorter-term and more speculative activity at the same time as physical resource limits to growth began to impose constraints. This has come at an alarming cost. Of the twenty largest countries in the world, constituting nearly three-quarters of global GDP, all but Japan suffered per capita losses in their natural capital stocks between 1990 and 2008.[5] Although natural capital can be eroded for decades, we already appear to have passed safe limits, most notably the atmosphere's limit to absorb carbon waste.[6]

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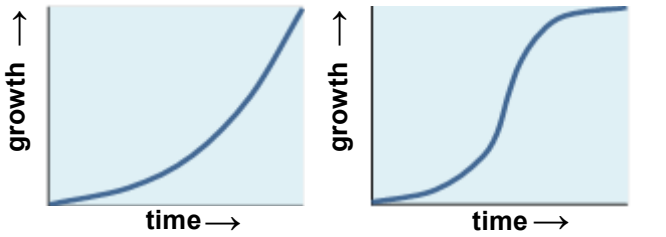
In the "full world" context in which we now find ourselves, quantitative limits to aggregate material growth logically imply limits to investment. Our challenge is now to determine where we invest and what we grow. Energy and material efficiency in the industrialized world and investments in support of healthy lives with dignity for the less developed economies are obvious top priorities.[7] Investments in fossil fuel-hogging luxury yachts and indoor skiing in the Dubai desert are not.

Continuing the pursuit of exponential growth of financial capital by drawing down both social and natural capital is unsustainable. Simple arithmetic demands that it will eventually generate some combination of financial, social, or ecological collapse. With the Great Recession as a wake-up call, we can begin to seek ways to shift the growth trajectory of financial capital from an exponential curve to a more sustainable (sigmoidal) growth curve as found in natural systems.

Pathways for the Growth of Financial Capital



Exponential (unsustainable) **Sigmoidal (sustainable)**

Thriving individual enterprises—particularly the ones needed to drive the economic transition—can and will continue to grow and deliver exponential returns to investors, at least for a while. However, even accounting for unanticipated efficiency gains in the energy and material intensity of the economy, the aggregate stock of financial capital will need to pass through a critical inflection point to declining rates of growth.[8] This

transition can occur through some combination of the following developments, many of which are already underway:

- a declining aggregate rate of return on invested capital,
- a systematic financial asset devaluation,
- the debasing of currencies through inflation,
- defaults leading to voluntary or involuntary debt extinguishment,
- an unprecedented scale of private philanthropy to recycle financial capital back into social and natural capital,
- a large-scale voluntary or policy-induced reinvestment of profits by the corporate sector into natural and social capital, and
- an increase in taxation to allow the public sector to recycle financial capital back into natural and social capital on behalf of vital public security interests.

Not only are we in ecological overshoot, but we are no doubt in "financial overshoot" as well.

We can choose to lead this transition to reduced growth in the stock of financial capital, while augmenting the stocks of social and natural capital, or risk having it forced upon us by nature's limits, social upheaval, or—most likely—both at the same time.

The Way Forward

The scale and complexity of the required shift in understanding is unparalleled, and time is not on our side. Not only are we in ecological overshoot, drawing down our life-sustaining stock of natural capital and putting social cohesion at risk because of growing inequality and related social stresses, but we are no doubt in "financial overshoot" as well.[9] Financial overshoot exists to the extent that financial assets—both stocks and bonds—are valued by a marketplace that has not yet fully accounted for the multi-decade adjustment process ahead in which honest pricing of externalities and the real resource constraints of planetary boundaries constrain aggregate growth rates. If this transition is left unmanaged, the feedback loops of financial asset valuation adjustments into the real economy could unleash chaos as we now know all too well.

Three interconnected solutions are apparent, all immensely challenging. First, we can work within the current neoliberal economic paradigm to shift the flow of investment by internalizing the costs of the externalities that we currently ignore. Second, business, government, and large pools of private capital can begin leading through enlightened real investment and integrated philanthropy even before a world of accurate accounting using honest pricing is realized. Third, the public can demand a new set of rules and regulations—some local, some regional, some global—to establish the necessary guardrails and mandates for the transition.

Getting prices right: Commercial enterprises must begin to pay the true social and environmental cost of their operations. Establishing sound measurement procedures and mandatory transparency is an essential first step, and many integrated reporting

initiatives show promise despite difficulties in enforcement.[10] Critically, however, the presumption that we can put a correct price on many of these costs is naïve and dangerous. Some costs represent harms that can be mitigated, while others represent wrongs that never can. The value of a life in a life insurance policy is certainly not the true value of that life. This same principle applies to the value of healthy ecosystem functioning—not "a life," but "life"—which is literally priceless. Getting prices "right" to the extent possible is a necessary, but insufficient, response.

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Enlightened private behavior: Progress is underway as smart companies and communities are investing in resource productivity and alternative energy to save money and accelerate the shift to a regenerative economy. Experimentation with forms of enterprise that better align all stakeholder interests, from partnerships and cooperatives to "for-benefit" corporations (B-Corps) and innovative forms of social enterprise, is accelerating.[11] A small group of entrepreneurs and enlightened stewards of capital are leading the way, albeit at a pace too slow and a scale too small. Could a group of large actors including businesses, governments, sovereign wealth funds, pension funds, foundations and endowments, and high net worth families—unshackled from speculative capital markets no longer fit for purpose and using innovative investment methods—work collectively to alter the course and quality of the economy through their aggregate real investment decisions and approaches?[12] Or will the emergent bottom-up, distributed innovation fueled by crowdsourcing scale to such a degree that it impacts the global economic system?

The answer remains unclear. On the one hand, climate stabilization demands that we not burn the vast majority of known fossil fuel reserves already sitting on company balance sheets, yet the energy industry continues to invest hundreds of billions of dollars per year in search of more.[13] On the other hand, real progress is afoot within the most progressive corporations, without which meaningful and peaceful economic transition would be difficult, if not impossible. A growing community of wealthy families, foundations, and sovereign wealth funds are engaging in "impact investing" and philanthropy to harmonize ecological and social impact with financial returns. But the critical large-scale expansion of this integrated approach, particularly the recycling of financial capital back into natural capital, has yet to emerge.

Public policy responses: No realistic assessment of the transition ahead, even by the most steadfast advocates of technology-driven and market-based solutions, can fail to see the primacy of the public sector's role in catalyzing this unprecedented shift. We will need new regulatory frameworks and incentives to help steer an economic transition more profound than the Industrial Revolution. Economically obvious but politically difficult policies like carbon caps and/or taxes must contribute to a portfolio of tools for curbing greenhouse gas emissions along with expanded research and development in clean technology. Action to remove subsidies from fossil fuel-based energy and agriculture and shift them to drive improved resource productivity and accelerated growth of renewable energy and sustainable agriculture is long overdue.

However, a larger and more uncomfortable requirement looms. In the full world of the Anthropocene, our notions of freedom will need to adjust to new realities.[14] Simply encouraging so-called "green investment" will not be enough if we do not curtail investment that has negative and even catastrophic impacts. Deciding the qualitative "what" and the absolute scale of investment must become a matter of the public interest. Logic then points to a fresh and expanded need for governance, even though our confidence in government at the moment is low (or nonexistent) because of valid concerns about competence and corruption. New and effective approaches to global and regional governance, likely using cities as the central nodes of coordinating power, are essential.

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In the crises ahead, the impossible will become the inevitable. The belief in the unencumbered freedom of large corporations and other large economic actors to make investment decisions that may have catastrophic and irreversible consequences must now be challenged. Activists fighting deforestation in the Amazon and the construction of the Keystone XL pipeline are showing the way forward. We must begin to accept some form of public interest influence over both the scale and direction of private and public investment capital flows as vital to our national and global security interests.

Opponents will inevitably attack this idea as socialism or worse. But it addresses a profoundly different issue than concerns about the ownership of the means of production. Given the linkage between investment and material throughput of the economy, how we choose to invest will determine to a significant degree whether we follow a path to a Great Transition or continue on the present course to societal destabilization and environmental collapse.

We can look to the public utility sector's (imperfect) permitting process for precedents of regulatory engagement in capital investment decisions at regional scale.[15] Numerous state and multilateral actors, such as the World Bank, already influence the course of investment capital flows globally, although not always in a positive direction. The idea is not new, but the potential scale and scope are, particularly in regard to the need to constrain certain investments like the unrestrained extraction of coal.

Central banks are obvious candidates for radical institutional reform to encompass this new imperative. Central banking in the Anthropocene might well entail qualitative mandates regarding investment and credit flows in addition to conventional inflation and full employment mandates. We must also tackle thorny questions regarding the public and private nature of banking institutions, the credit creation function which the banks now manage under a fractional reserve system, and the alignment of the mission of banks with public purpose rather than private speculation at public expense.

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We will achieve our greatest impacts if we can rein in and influence the capital investment decisions of the largest corporations and the G-20 governments, as well as the credit decisions of the fifty largest global banks and financial intermediaries. Supporting public policies can achieve this while allowing more decentralized entrepreneurial energies to flourish at appropriate scale within a new macro framework. If mega-firms in the private sector fail to act in accordance with this overriding public interest, or prove to be ungovernable, we may have no alternative but to nationalize and manage them in the public interest, as Milton Friedman's revered teacher H.C. Simmons well understood in his own context.[16] Although such a suggestion is fraught with huge challenges, we must look head-on at the scale and scope of the transformation we need, particularly in the fossil fuel, agriculture, and banking industries.

Can such unprecedented global oversight, even if limited to the most critical economic actors, be practical without harming the global economy? We have no choice but to try, for business-as-usual will lead to ecological and social collapse—and, of course, the collapse of the economy as well. There will inevitably be short-term efficiency and growth trade-offs in exchange for system resilience. The rich countries will need to find prosperity without growth in material resource throughput—in fact, with an immense increase in material efficiency.[17] At the same time, the developing world will need to foster human and ecological well-being through more intelligent technology choices than currently deployed in the North.

The careful, holistic management and monitoring of aggregate real investment flows are an inevitable part of the economy of the future and the challenging transition to it. This will require new global oversight mechanisms, informed by the best scientific understanding of critical ecosystems and empowered by sovereign nation-states and global corporations, to define and enforce a "safe operating space" within which our innovation-driven, free-market system can thrive.[18] Like the canvas for a painter, boundaries will provide the discipline that enhances creativity. The extreme degree of financial speculation that defines the financial landscape today has no place in such a future and must be curbed immediately.

Large-scale investment decisions simply must be considered a vital part of the public interest. The sooner we acknowledge the implications of this immense challenge the better.

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