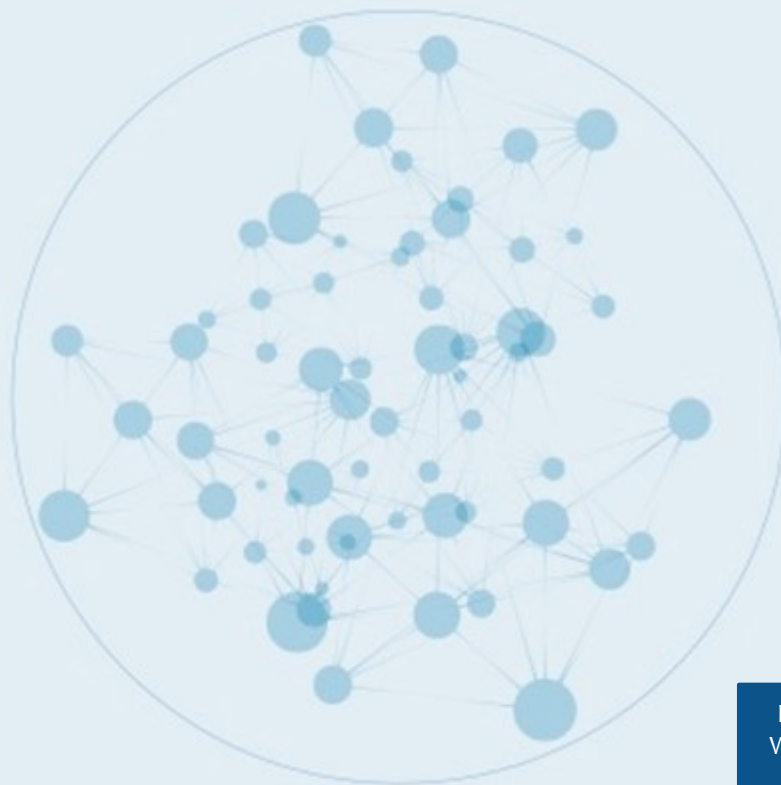




ALIGNING THE FINANCIAL SYSTEM WITH SUSTAINABLE DEVELOPMENT IN THE UNITED STATES OF AMERICA



INQUIRY
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The UNEP Inquiry

The Inquiry into the Design of a Sustainable Financial System has been initiated by the United Nations Environment Programme to advance policy options to improve the financial system's effectiveness in mobilizing capital towards a green and inclusive economy—in other words, sustainable development. Established in January 2014, it published its final report, *The Financial System We Need*, in October 2015.

More information on the Inquiry is at: www.unep.org/inquiry and www.unepinquiry.org or from: Ms. Mahenau Agha, Director of Outreach mahenau.gha@unep.org.

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Comments are welcome and should be sent to nick.robins@unep.org.

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Introduction

Sustainable development is largely a matter of time — a set of milestone dates for changes to the physical superstructure of the economy. These milestones are established to assure sustainability of our societies, particularly with regard to the climate and economic inclusiveness. Missed milestones have geometrically compounding consequences, the costs of which exceed the cost of meeting the milestones. Significant changes to the climate and to inclusiveness can threaten the quality or even the existence of fundamental physical supports for the society (food, water, health and economic well-being) and the integrity of the political economy needed to support social systems. The time scales involved are likely to be measured in years and sometimes decades, but the consequences are a function of today's investment of resources.

Many changes to the climate and inclusiveness of both the US and the world have occurred already and can be directly observed. Others can be projected or forecast. The overarching goal is to have levels of investment of resources to address sustainability that are sufficient to meet the sustainability milestones and to avoid both additional costs that could accrue specifically as a result of delay and, even more importantly, avoid the occurrence of an inflection point at which consequences to the society of changes to the climate or to inclusiveness become much greater.

The task here is to examine the decision process embedded in the US financial markets that determines what endeavours are funded by capital investment. This will lead us to understand the relationship between the process and the current and future levels of investment in the context of time horizons so that the milestones described above can be met and the costs and inflection points avoided.

In summary, two countervailing forces are significant to the relationship between the US financial market and sustainability:

- The US financial system benefits from large pools of investment capital that can be deployed efficiently because of the highly developed ability to capture and process information that is relevant to the valuation of investment opportunities. Investors are increasingly able to make their views known to management. Capital intermediaries are sophisticated and well capitalized and their ability to create innovative investment vehicles is unsurpassed.
- Because of the increased efficiency of information flows and sophistication of intermediaries, investors have grown to view the investment process differently. They are less inclined to see themselves as acquiring an investment that they will hold until they realize actual returns, and are more inclined to hold an investment for a period during which they continuously decide whether to sell or replace it. Investors rely on the ability to realize predictable value for expected returns by accessing a market for the investment. The transformation of information into price occurs not only at the time an investment is acquired, but also continuously as a consequence of technology- and capital-rich markets. In response to shareholder preferences, the management of companies performs its role to align with shareholder views, prioritizing short-term market price of shares over long-term value.

These two forces are critical to sustainability and inclusiveness outcomes in the US financial system. The problem-solving capacity in the US system is great. Its innovativeness and flexibility are great assets. The application of this capacity to the challenges of sustainability would be of immense benefit to US and world society. However, if the system's strengths are going to be deployed to address the need for sustainable investment, the valuation of investments needs to capture these social benefits. Therefore,

the compatibility of a system based on continuous assessment of price by investors with the financial system's ability to fund investments that meet the sustainability milestones needs to be considered.

Timescales relating to capital investment decisions in the US financial system are perhaps the shortest of all marketplaces. Thus, the inquiry into the US system promises to be enlightening both intrinsically and as an outlier case for comparison with other systems.

Much has been written about short-termism of both investors and managers in economies with highly developed financial systems, and in particular in the United States. It is often asserted that this short-termism is an impediment to private sector investment in sustainability.¹ Moreover, the emerging structure of sophisticated financial systems, often referred to as “financialization,”² has been linked to unsustainable social inequities in terms of income, employment and human development.³ This paper weaves these observations together in the following way:

- Short-termism is seen as related to financialization. Financialization shortens timescales during which the significance of information declines in the process of pricing investments. This means that information related to time periods nearer the pricing decision is relatively more important as financialization increases, which is to say short-termism increases.
- Increasing short-termism decreases the competitiveness of categories of investments, including many of those which decrease inequality as well as those which increase sustainability. Generally, investments for which returns are realized later in the investment's practical life cycle⁴ are less competitive.

Thus, in considering the alignment of the financial system with sustainability, both in the aspect of climate and of social issues such as underinclusiveness and inequality, the structure and practices of the financial system are significant to the competitiveness of sustainable investment in the financial marketplace. In the context of the US financial system, financialization and consequential short-termism are important factors in determining whether the full potential of the US financial system to assure sustainability is realized.

Capital Investment Decision Structure

In the US financial system, the investment process is particularly quantitative- and technology-driven. An investment decision always involves a comparison between the instant opportunity and at least one alternative (competing investment opportunity, or, in the extreme case, the alternative of not investing, which can be seen as a baseline). Evaluating an opportunity and an alternative involves a risk-weighting of the net benefits of each (assigning probabilities of good and bad outcomes, risks and rewards) projected out over time.

Time is an important factor in risk-weighting for two reasons.

- First, outcomes that are to occur later are more uncertain and inherently riskier. Therefore, the value of assumed projected or forecasted benefits is lower (that is to say, the values are discounted more) if their occurrence is further in the future. Therefore, such net benefits should be discounted for the higher uncertainty. This is the time-based discount of fundamental investment value. We will refer to it as “fundamental value convexity.”⁵ It is notable that most valuation models are biased toward measurement of risk of diminished value and ignore the risk that the projected or forecast value may be understated. This may be particularly significant in pricing sustainability investments in which the magnitude of consequence of non-investment is

asymmetrically high: models used to reflect time-based uncertainty may not proportionately reflect the potential for higher value of an investment.

- Second, time is important to the fact that an investor may need or desire to convert the investment to cash prior to the realization of valuable benefits. The investor may need to increase liquidity for reasons unrelated to the fundamentals of the investment or may desire to do so because they believe they have superior knowledge about the investment that is best converted to realized price before the knowledge spreads. Therefore, time is important because the investor may want to truncate their holding period for the investment. The ability to do so reliably and at a discernible and predictable price is the investment's "liquidity," which is valued in determining price.

Adjustment of net benefits for time is also a function of the cost of applying cash to acquisition the investment and valuing the future receipt of cash returns. Cash is a limited commodity and its use and receipt always have value. For an investor who raises money from other investment sources to invest further, the cost may be viewed as the rental cost of the cash, meaning the cost to borrow over the time required to realize the return on the investment. For an investor whose cash is in hand, the cost is the opportunity cost of investing the cash without risk. If the investor has debt outstanding that can be repaid from the cash, the interest cost of this debt is the opportunity cost. If the investor has no debt that can be repaid, the opportunity cost is equivalent to the treasury rate over the time period until the benefit is realized. In either case, the basic principle is that a lower investment and a higher risk-weighted expected net cash return is better than the alternative and how much better is a function of the cost of the cash invested (either opportunity cost or cost of capital) to the investor.

In summary, time affects the fundamental value of an investment – the cost of the investment and the expected net benefits projected or forecasted to be received by the investor – and the investment decision among investment alternatives in three ways:

- Fundamental value convexity.
- The liquidity of the investment.
- The cost of cash.

Governmental and Private Sector Investment Decisions

Each of the foregoing principles is applicable to investment decisions by both governments and the private sector. The differences between governmental (meaning central governmental) and private investment are two. The government can rent cash at the riskless rate so it never has the increased cost of having to borrow beyond that which is strictly time-based. Additionally, the benefits included in the government's assessment are those realized by the public, which are real even if often difficult to value quantitatively. Therefore, compared with governments, private investors have the following characteristics:

- Because of adjustment for time value, nearer term realization of benefits is of higher value relative to longer term realization of benefits, which can affect the outcome of comparing one investment alternative (with earlier realized benefits) against another (with later-realized benefits). For example, a private investor may prefer one set of net benefits over another more than a government would because the government discounts later-realized benefits less.

- Private investors generally measure benefits based on their discrete and narrow interests, devoid of conceptual altruism or public benefits. This is especially true for investors that pool the money of others in order to achieve economies of scale in investing.⁶ Unless the providers of the pooled funds do so under agreed terms that value public benefits, or unless the government requires investment based on such valuation as a condition of engaging in the pooled investment activity, an agent who is responsible for managing the pooled funds is bound to act in the interest of its principals expressed as quality of risk-weighted return. Of course, a public benefit can also be a benefit to a private investor. This can occur under two conditions:
 - The investment can be in an enterprise that provides a public benefit for which it is compensated by the government or for which it receives revenue from another source (e.g., the government gives the investor access to user fees).
 - The investor can benefit as a member of the public. For example, if a condition that adversely affects the entire economy also adversely affects the investment portfolio of the investor, an avoidance of the condition has value to the investor. This logic imposes two complications on the investment decision.
 - The benefit of the investment to the investor may be much different than the benefit to other investors or to the public at large. For example, the benefit to the public at large can be large relative to the investment, but the benefit to the investor is much smaller.
 - The investor will realize the benefit without ever having to expend the initial cash if another investor or the government makes the investment. As a result, assuming no government investment, the investment decision is a manifestation of the prisoners' dilemma: the optimal result for investors collectively is that each invests pro rata based on public benefits from activities funded; and the optimal result for an individual investor is that one or more other investors makes those investments. For most institutional pooled investors, this dilemma is avoided and they measure their performance by comparison with the direct financial results of other investors, meaning that they can freeload on other investors and no other investors can freeload on them. It also means that no investment in public benefits will be made.

Below, we will identify the implications of time for investment in sustainability for both the public and the private sectors. Within the private sector, we will discuss two separate issues, reflecting the characteristics described above:

- Investment in activities that promote the investment in sustainability within such time horizons, and
- Disinvestment in activities that impair the investment in sustainability within useful time horizons.

We will also explore the issue of the interplay between public benefits and investment decisions in terms of forms of governmental incentives favoured in the United States.

US Investment Decision Structure and Sustainability

The predominance of these quantitative characteristics is both good and bad for the alignment of the financial system with sustainability investment in the US. The system includes diverse and large classes of investment. This is particularly conducive to investing in innovation and to aggregating smaller investment opportunities to achieve economies of scale. On the other hand, the relatively high sensitivity of investment decisions in the US to duration prior to realization of returns – *i.e.*, liquidity – does not fit return patterns for many sustainability investments. Fundamental value convexity is therefore very high. Nonetheless, the US financial system is particularly flexible so that it can adopt structures that bridge these gaps if the incentives are definable and measurable.

Measured by quantity, investment in sustainability in the US is currently inadequate to meet the need by a large measure. As described below, the estimated annual investment gap for clean energy, assuming a 40% reduction of fossil fuel use over the next 20 years, is US\$152 billion and the estimated annual gap for investment in other infrastructure just to maintain current levels of quality is another US\$246 billion. Simply stated, in the current US financial system, investment in sustainability as a class is not sufficiently competitive with other investment opportunities to generate the volume and types of investments needed to meet sustainability goals in terms of climate and social issues. Barring a reduction of the demand for sustainable development, investment volumes are not likely to meet reasonable goals related to climate change over the decades ahead or to reverse the declining inclusiveness in the economy.

The unique strengths of the US financial system – its sophistication, flexibility, diversity and size – could help bridge this gap, but standards, processes and behaviours need to be adjusted. There are two non-exclusive approaches to rebalance relative competitiveness in favour of sustainability, each with subordinate tactical pathways that could alter the competitive balance.

- Investments that compete with sustainability, and in particular investments that diminish sustainability, could be made less competitive.
 - The fundamental return on these investments could be reduced by requiring them to bear the cost of externalities. For example, carbon consumption could be taxed. In this approach, the businesses that compete with sustainable development and their owners pay the cost of rebalancing competitiveness directly.
 - The valuation of these investments relative to sustainability investments could be changed by adjustments to the US capital intermediation system. There are two primary

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