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CLIMATE CHANGE AND CORPORATE RISK

Marc Levinson^{AC}

Industry Economist

(1-212) 622-5552

marc.levinson@jpmorgan.com

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Is climate change real?

- Battle rages, especially in US, where many “conservatives” treat climate change as a matter of ideology rather than of science
- Scientific evidence that average temperatures are rising due to human activity is overwhelming
- Estimates about the specific consequences of climate change - greater hurricane activity, melting of ice caps, reduced precipitation in certain regions - are subject to much uncertainty with respect to severity, location, and timing

But . . .

Whether climate change is real is not an important question in evaluating corporate risk

Companies face three risks from climate change

- Physical risk - the probability of actual loss or business interruption from climactic changes induced by global warming
- Regulatory risk - consequences of potential or actual government actions intended to address the threat of climate change
- Reputation risk - the possibility of loss of business as customers turn away from a firm perceived as a “bad actor”

Please note . . .

Even if we assume that climate change is not real, regulatory risk and reputation risk are not diminished in any way

Physical risk

- The physical risk from climate change over a time horizon relevant to investment decisions is supplemental to and largely indistinguishable from existing risks, such as drought, flood, and coastal erosion
- The magnitude and timing of specific physical risks arising from climate change are highly unpredictable
- The severity of physical risk from climate change is likely related to atmospheric greenhouse-gas concentrations, and hence greater in the more distant future, minimizing the net present value of potential loss
- In many cases, physical risk can be mitigated
- For most corporates, with the exception of property and casualty insurers, physical risk arising from climate change is not of great concern

Regulatory risk

- Regulatory risks related to climate change can take many forms, such as
 - Emissions restrictions
 - Taxes on emissions
 - Subsidies, subsidies to competitors, revocation of subsidies
 - Land-use restrictions
 - Trade restrictions
- Indirect regulatory risks, such as those affect supply chains or customers, may be far more important than those directly affecting a firm's facilities
- Regulatory risks can bring extremely large costs in terms of outlays, obsolescence of capital stock, or foregone business
- Regulatory risks can be difficult to foresee or manage

Reputation risk

- Consumers are increasingly using environmental criteria in making choices, especially in Europe
- Products, services, and entire companies are being preferred or avoided based on perceptions of their “sustainability”
- Judgments about “sustainability” are not amenable to rigorous quantitative analysis, but depend heavily upon prejudices and perceptions based on whatever information the consumer chooses to trust
- Although business customers make purchasing decisions more rigorously, they are sensitive to potential consumer concerns about suppliers
- Given widespread concern about climate change, companies perceived as recalcitrant or profligate face negative business consequences

In general . . .

Arguing with customers is a bad business strategy

Investors consider corporate climate-change risk

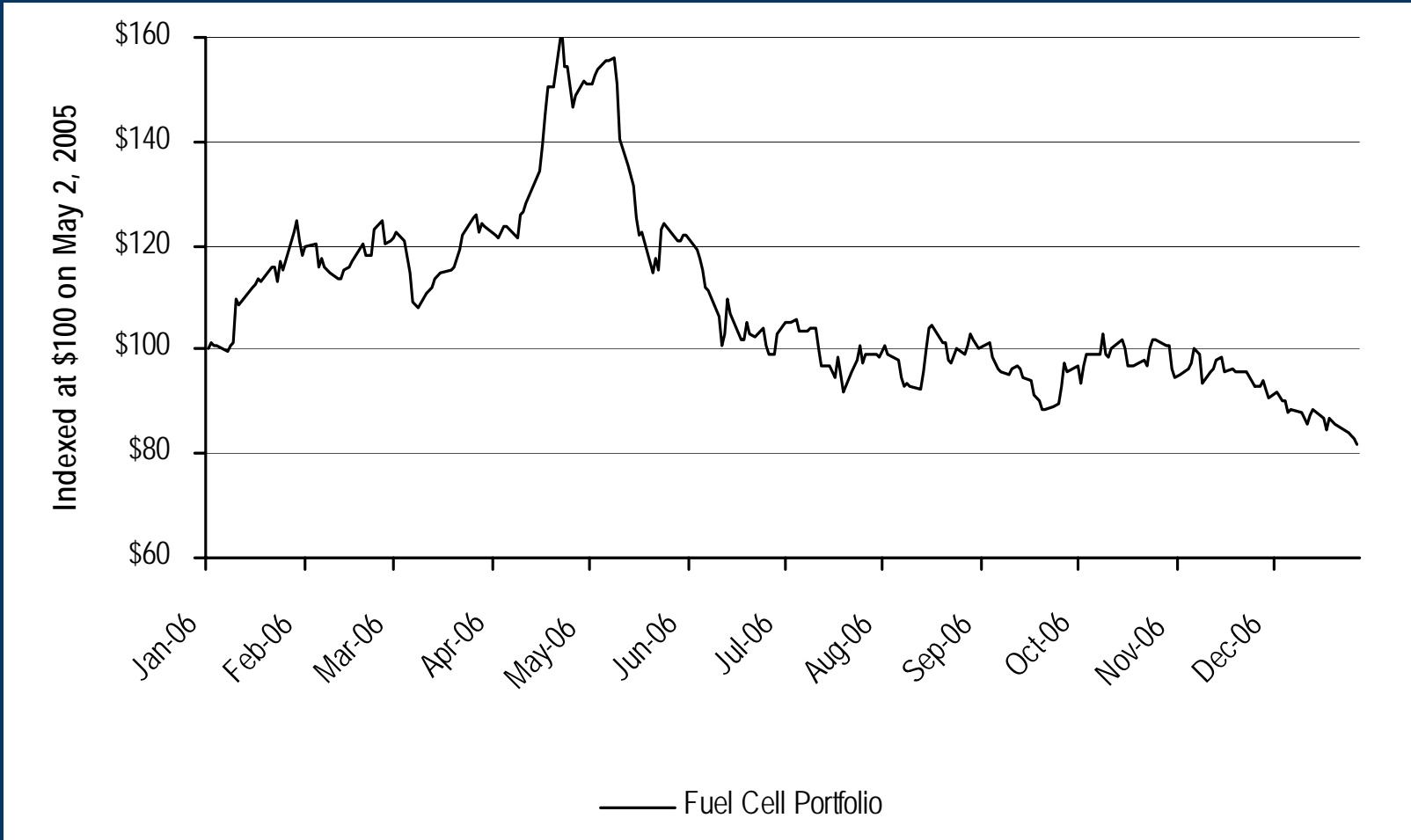
- Investors generally ignore physical risks of climate change, appropriately
- Investors often wildly misjudge regulatory risk, especially in countries outside their own, and overestimate the importance of technology in mitigating or taking advantage of risks related to climate change
- Investors are frequently slow to pick up on reputation risk, which can become problematic very quickly due to the efforts of organized interest groups and access to near-costless communication
- Many investors admit to using companies' responses to climate-change risk as a proxy for quality of management

Investment outcomes are not straightforward

- Current schemes to mitigate climate change are fostering “alternatives” that lack viability in absence of subsidies, and relevant stocks move wildly on expectations of policy changes

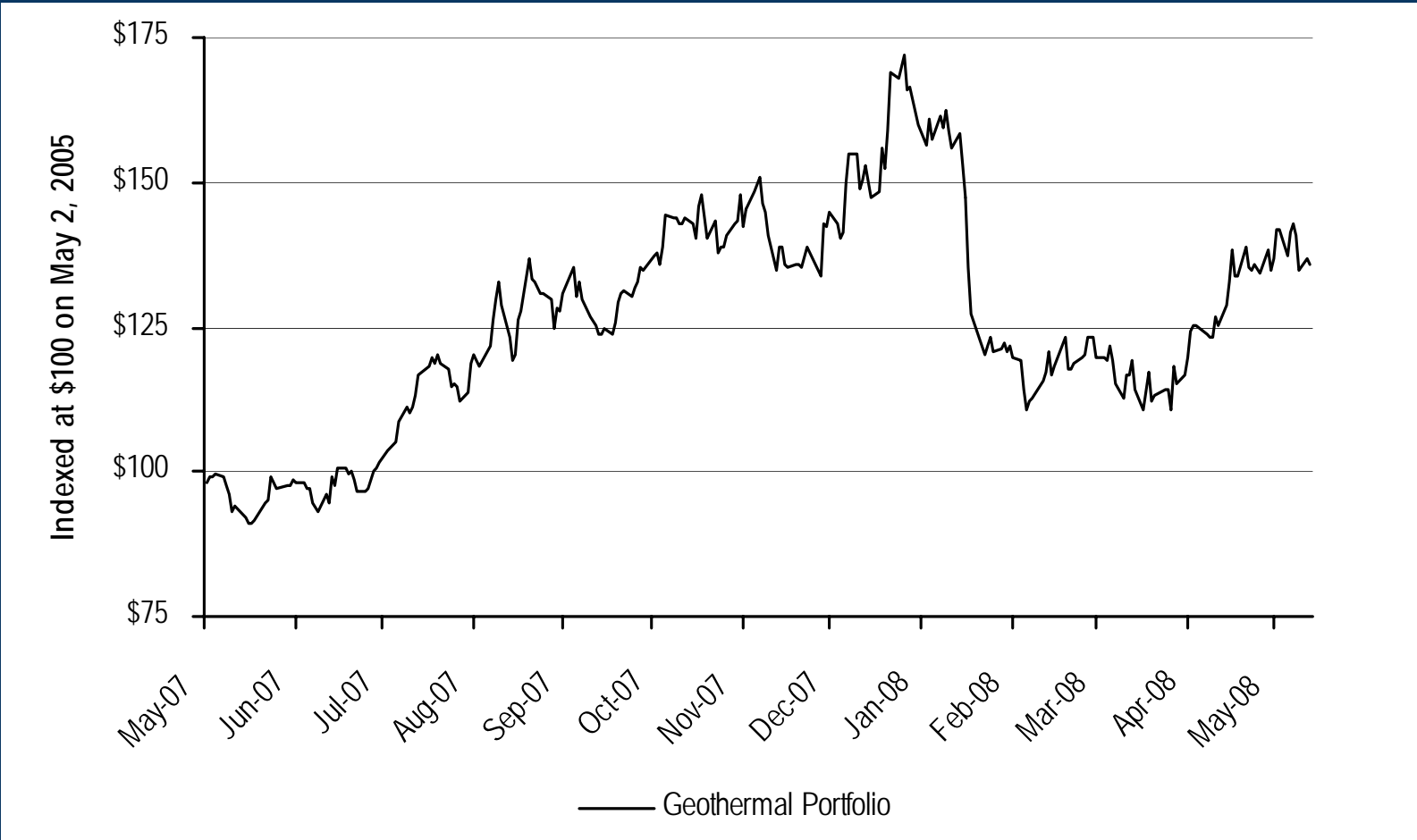
A few examples . . .

North American fuel cell stocks, 2006



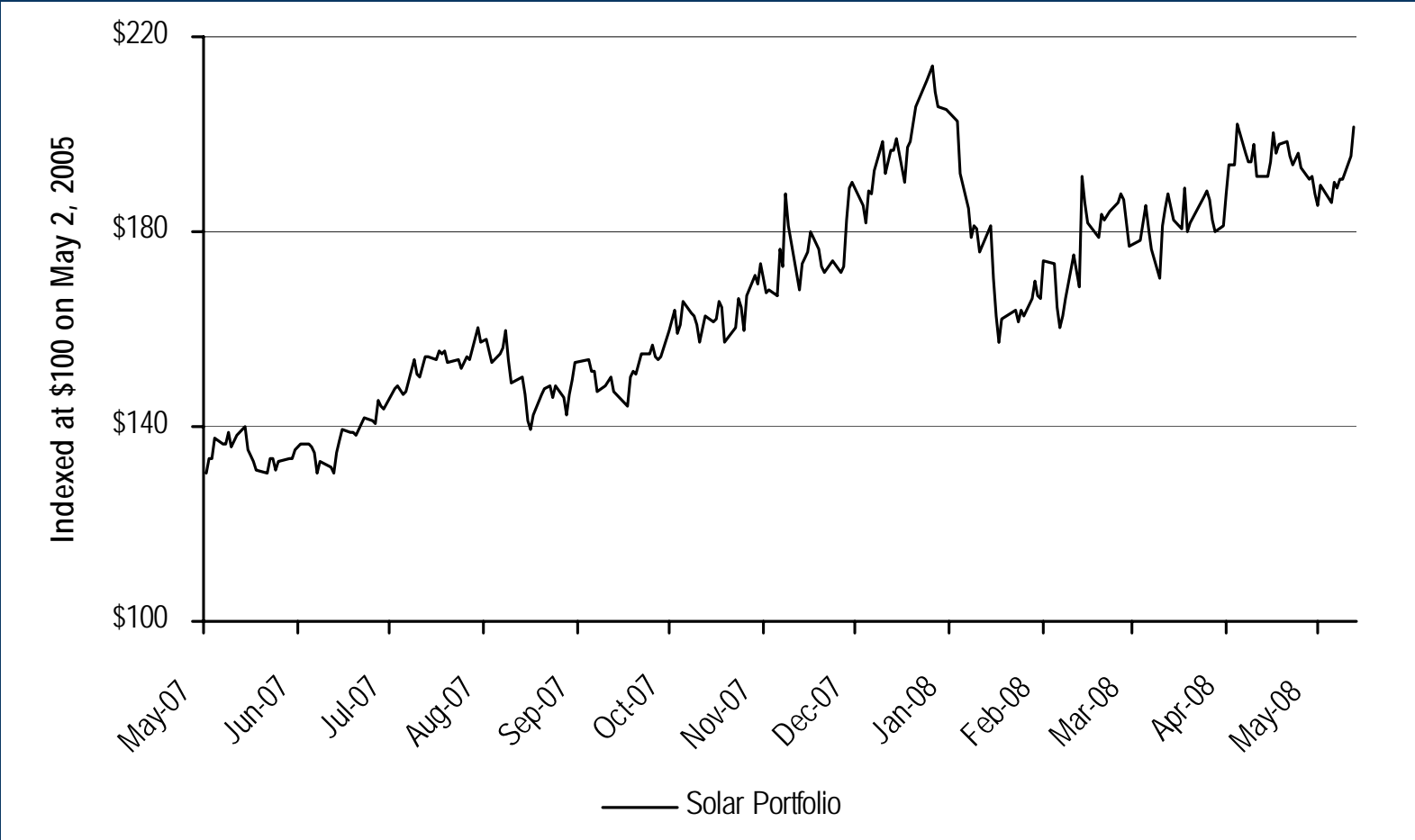
Source: JPMorgan

North American geothermal stocks, 2007-08



Source: JPMorgan

North American solar stocks, 2007-08



Source: JPMorgan

Postponing action increases corporate risks

- At current market prices, the only unconventional technology that makes economic sense while reducing greenhouse-gas emissions is conservation
- Coal - the fossil fuel most responsible for climate change - appears likely to be the political winner in US, Europe, perhaps even Japan and Australia
- Nukes have gained popularity as “clean” alternative to coal, but construction is lagging as utilities seek government funding
- Addressing climate change will require both efficiency standards and a sustained rise in the real prices of fossil fuels - and we see little evidence that the public understands or is prepared to accept this cost
- This creates a potentially dangerous situation for corporates, as the lack of price rises related to greenhouse-gas emissions now means high uncertainty surrounding capital investment and potential for stranded capital if further scientific evidence on climate change leads to sharper regulatory measures in future years

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