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FROM **Randall Pozdena, PhD CFA • *pozdena@quantecon.com***
TO **Joint Committee On Carbon Reduction**
RE **HB 2020**
SUBJECT **Why Cap and Trade is Bad for the Oregon Environment and Economy**

BACKGROUND

The Oregon legislature is considering passage of a bill to create so-called "cap-and-trade" regulations to reduce greenhouse gas (GHG) emissions. Put simply, the cap-and-trade mechanism involves (1) imposing progressively tighter caps on GHG emissions in the state over time, (2) requires affected businesses to purchase permits to produce GHG emissions, and (3) creates a mechanism by which entities with excess permits can sell those permits to firms that cannot easily contain their emissions. *I have received no payment or encouragement from any entity for providing these views.*

WHY CAP-AND-TRADE IS BAD POLICY FOR OREGON

My concerns about HB 2020 derive from two main issues:

1. **Cap-and-trade systems already in place display serious problems**

   - The rate at which GHG emissions are declining under cap-and-trade is no faster than the rate observed in the US as a whole—without universal cap-and-trade.
   - The existing markets for trading emissions allowances—a key feature of the cap-and-trade approach—have been deemed "failures".
   - The Oregon approach is closely modeled on the California cap-and-trade system. That system resulted in *increases* in local GHG emissions in disadvantaged communities—raising questions about the equity of cap-and-trade.
   - The price of pollution permits in cap-and-trade markets is very low. This implies that the marketplace is not expecting difficulty in reducing emissions— contrary to the argument for having cap-and-trade in the first place.
   - The bureaucracy necessary to implement cap-and-trade is proving difficult and costly to manage wherever it is implemented. It is also prone to corruption.

2. **The side effects on the Oregon economy have been underestimated**.

   - This is a serious issue since transitioning the economy to a lower carbon footprint will involve expensive technologies.
   - HB 2020 proposes that the revenue raised by permit fees be spent by the State on other related programs. As evidenced by the defunct Business Energy Tax Credit, it is not clear that the State has expertise in picking winners in energy policy.

- Assumptions by consultants who favorably evaluated the Oregon policy are unreasonably optimistic, especially regarding the cost and use of alternative energy.

- The evaluation by consultants employed a modeling approach that is widely used but is notoriously opaque and sensitive to the assumptions made.

- The finding by the consultants that cap-and-trade would *increase* Oregon jobs and strengthen economic growth—in a setting of higher energy prices and the high cost of alternative energy sources—is very suspicious.

THE EVIDENCE BEHIND MY OPINIONS: CAP-AND-TRADE PROBLEMS

- **Carbon reduction trends are no different with or without cap-and-trade**. The European Union initiated the world's largest cap-and-trade program in 2005. In contrast, the US did not adopt comprehensive cap-and-trade. Yet, on a per capita basis, over the period 2006 to 2018, the decline in total tons was identical between the US and the EU at 22 percent over that period. There was only one large state, California, that initiated cap-and-trade, albeit late in this period (2013).

- **The EU economy appears to have been harmed by cap-and-trade**. There is no good way to measure the harm to the economy of cap-and-trade. This is one of the many serious problems for cap-and-trade monitoring. However, considering that the US economy grew 31% faster in real terms than EU-28 over the 2006 to 2018 period, either the US is much better than the EU at growing the economy without increasing emissions, or the EU paid a significant price in slow growth by its adoption of cap-and-trade.[1]

- **California's cap-and-trade program effectiveness is disappointing**. The California cap-and-trade system is not proving to be any more effective than the EU scheme. California emissions peaked at 489 million metric tons in 2004 and fell to about 440 million metric tons by 2015. That 10.5 percent decline is actually less than the decline in US as a whole at 11.5 percent over the same time period— mostly without cap-and-trade.[2]

- **The emissions trading markets—a necessary feature of cap-and-trade—have been failures.** The two key carbon markets established after the 1997 Kyoto Protocols are the EU Emissions Trading System (EU-ETS) and the UN's carbon offsetting scheme, Clean Development Mechanism (CDM) where prices are similar to those in the US. Both markets are considered "failures" by financial market experts in the sense that carbon allowances are not trading at prices that suggest there is difficulty in adjusting GHG emissions.[3] Similarly, in California's carbon market, the current price (on February 12, 2019) is similarly low at approximately $15 per metric ton of CO2 according to Carbon Dashboard. In contrast, the current EPA estimate of the social cost of a ton of atmospheric CO2 is about $37 today.

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[1] Emissions data is from http://www.globalcarbonatlas.org/en/CO2-emissions. The economic growth data are from the Federal Reserve Bank of St. Louis FRED database.

[2] Data sources: https://www.c2es.org/content/u-s-emissions/ https://www.c2es.org/content/u-s-emissions/

[3] https://www.theguardian.com/sustainable-business/blog/why-are-carbon-markets-failing

- **The prices at which permits are traded in cap-and-trade programs are notoriously volatile.** This is inherent in the nature of the programs because there are relatively few entities in the permit trading marketplace and because the future paths of permit prices is unknowable. Price volatility is not just an inconvenience; it is well known to be toxic to business decision making in general and stock market support for businesses that are subject to such volatility.[4]

- **Managing offset opportunities is problematic and plagued by corruption**. The ability to develop new activities that can sequester or offset emissions is a key part of a cap-and-trade scheme. However, regulators must determine whether these are new activities or ones that would have occurred anyway. In actual practice, the quality of these determinations has been a major means by which cap-and-trade programs have suffered from corruption and influence. There have been warnings about this tendency from the beginning of the cap-and-trade.[5]

- **Cap-and-trade programs are seriously inequitable, shifting significant emissions costs to poor communities**. As a recent report revealed, "Our results indicate that, thus far, California's cap-and-trade program has not yielded improvements in environmental equity with respect to health-damaging co-pollutant emissions." The researchers found that 52 percent of the companies regulated under the program increased their annual average greenhouse gas emissions. Those companies are largely located in disadvantaged communities which are hit hard by environmental pollution.[6]

THE EVIDENCE BEHIND MY OPINIONS: THE ECONOMIC IMPACT OF HB 2020

- **Evaluations of the economic impact of cap-and-trade for the State of Oregon**. These are summarized in a report by Berkeley Economic Advising and Research (BEAR) to the State Carbon Policy Office.[7] The presentation that is circulating at this time is also by BEAR.[8] Previous evaluations by others generally found slightly negative or slightly positive economic effects of the predecessor bill HB 4001. I find all of the reports to be overly optimistic given the magnitude of the intrusion of policy that cap-and-trade represents.

- **The circulating BEAR presentation, however, is strongly and positively worded.** The BEAR presentation, in my opinion, is the least believable. It asserts that Oregon can enjoy positive job and income growth (above what would otherwise have occurred) by pursuing cap-and-trade. It also asserts that there will be an increase in income in every tax bracket, but especially for the lowest income bracket. Cap-and-trade involves significant diversion of spending from private businesses and house-

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[4] See the Carbon Dashboard, at http://calcarbondash.org.

[5] Victor, David (2009). "The Problem with Cap and Trade," *MIT Technology Review.*

[6] Cushing, L. *et al.* (2018). "Carbon trading, co-pollutants, and environmental equity: Evidence from California's cap-and-trade program (2011–2015)", PLoS Med 15(7): e1002604. https://doi.org/10.1371/journal.pmed.

[7] Berkeley Economic Advising and Research (BEAR), *Oregon's Cap-and-Trade Program (HB2020): An Economic Assessment, undated.*

[8] BEAR, *Oregon's Cap-and-Trade Program: An Economic Assessmen*t, slide presentation,February 2019.

holds to the State. The State also enjoys power to spend cap-and-trade revenues on programs and policies of its choosing. Generally, taking resources from the private sector and putting them in the hands of the public sector is not expected to be efficiency enhancing. Thus the BEAR modeling must assume the contrary.

- **The sources of stimulus of the economy are equally unbelievable in the BEAR report.** Namely, they assert that the stimulus comes from large scale adoption of efficient energy technologies, income/expenditure effects of energy savings, and public health benefits of emission reductions. While the latter is a likely impact of successful reduction in GHG emissions, the other two rely on the strong assumption that energy efficient technologies (a) will be adopted on a large scale and (b) will yield reduced spending on energy of sufficient scale to support much higher expenditures and job creation.

- **"Germany's Miss" on its GHG emissions program is illustrative of the challenges.** In contrast to the Pollyanna predictions of BEAR, Germany's experience illustrates the challenges of wholesale renovation of an energy economy. It is estimated that Germany will have spent $580 billion (by 2025) renovating its energy economy. That is over $21,000 per household. Despite the renovation, financial savings from the switch to renewables are hard to find. Electricity costs are currently over 33 US cents per kilowatt hour (and rising) versus about 10 cents in the US. Although transport consumes 30 percent of Germany's power, only 4 percent comes from renewables. Household power consumption is still primarily in the form of fossil fuels. The bottom line, "The challenge looks really difficult," said Andreas Loeschel, head of the government commission monitoring Germany's energy transition. "**There was too much confidence that renewables would do the trick**. …" (emphasis added) [9]

- **The future role of solar power and electric vehicles remains debatable.** The BEAR analysis relies on long term declines in the cost of both solar power and electric vehicles. There remains an active debate concerning the measurement of photovoltaic (PV) costs associated with generation of electricity—especially in latitudes similar to Oregon's (the 45th parallel). By one estimate, "…an electrical supply system based on today's PV technologies cannot be termed an energy source, but rather a non-sustainable energy sink or a non-sustainable net energy loss," [10]

- **The type of model used by BEAR is widely used, but its opacity makes it hard to evaluate the realism of internal assumptions.** The so-called Computable General Equliibrium (CGE) model used in the BEAR report is the source of the forecasts of future economic conditions. However, some have criticized the use of the CGE framework in precisely the setting here—i.e., when one cares about the dynamic behavior of the economy in the long run.[11]

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[9] Wilkes, W. *et* al., "Germany's Failed Climate Goals: A Wake-Up Call for Governments Everywhere," *Bloomberg*, August 15, 2018. https://www.bloomberg.com/graphics/2018-germany-emissions/

[10] Ferroni, F. and R. Hopkirk, "Energy Return on Energy Invested (ERoEI) for photovoltaic solar systems in regions of moderate insolation," *Energy Policy,* 2016.

[11] Mtra-Kahn, B. H., Debunking the Myths of Computable General Equilibrium Models, Working Paper 2008-1,

CONCLUSION

By pursuing cap-and-trade as a remedy to GHG emissions production, the State is choosing an opaque, costly and burdensome regulatory approach. In the end, if cap-and-trade is adopted, the challenge of improving the environment while maintaining a healthy economy will be not be well served. The US has been reducing its carbon emissions without doing great harm to its economy. If one wishes to accelerate that pace, a truly transparent and market-oriented policy such as a revenue-neutral carbon tax should be used.

There is no need to follow the EU and California down an opaque and bureaucratic rabbit hole. There is an alternative. A revenue-neutral carbon tax has the advantage of simpler administration and greater transparency. It also avoids the risks associated with missteps in the State's selection of ways to spend the revenue collected because the funds collected by the private sector are returned to the private sector. Indeed, this finding is corroborated by many economists, most recently by Stanford's Goulder and Schein (2013) who found cap-and-trade an **inferior alternative to a simple carbon tax in 6 out of 7 key dimensions of impact.**

Personally, I am very dubious about the benign, indeed ebullient, forecast offered in the BEAR presentation to the Committee. I believe it is axiomatic that a major restructuring of the key energy sector of the Oregon economy will only come at a significant penalty in the form of dislocation of activity, cost burdens, and inefficiencies.

About the Author

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