

MEMORANDUM

To: EAAC Revenue Subcommittee
From: James K. Boyce
Re: Dividends
Date: August 6, 2009

This memo discusses the return of carbon permit auction revenues as equal per capita dividends to the public, a policy sometimes termed “cap-and-dividend.”

This policy option was singled out in Governor Schwarzenegger’s May 22, 2009 letter to the EAAC:

There is one idea in particular I would like you to explore among other options: the concept of returning the value of allowances back to the people, including through an auction of allowances and distribution of auction proceeds in the form of a rebate or dividend.

The memo reviews (i) rationales; (ii) precedents; (iii) distributional impacts; (iv) criticisms; and (v) taxability of dividends.

Rationales

There are two fundamental rationales for cap-and-dividend:

1. *The principle of common ownership of nature’s wealth:* A consequence of any policy to limit use of a resource – to manage scarcity – is the creation of property rights. Cap-and-dividend starts from the premise that rights to the property created by the introduction of carbon permits belong in common and equal measure to all. Cap-and-dividend is akin to a “feebate” arrangement in which individuals pay fees based on their use of a scarce resource that they own in common, and the fees are then rebated in equal measure to all co-owners. In this case, the scarce resource is the California’s share of the carbon storage capacity of the atmosphere; the fee is set by the carbon footprint of each household; and the co-owners are the people of the state.
2. *Protection of household real incomes:* A second rationale is to protect the real incomes of households from the impact of higher fossil fuel prices resulting from the cap. The motivation here is similar to others under the heading of compensation. If the amount paid by households in higher prices is returned as dividends, the household sector as a whole is “made whole” by the policy. The net impact on individual households varies, however, depending on their carbon footprints. People with higher-than-average carbon footprints pay more than they receive in dividends; those with lower-than-average carbon footprints receive more than they pay. Since carbon footprints are correlated with income, lower and middle-income families generally receive greater net benefits from the policy than

upper-income households. But across the income spectrum, households have an incentive to reduce their carbon footprints by virtue of market price signals: those who reduce them more obtain greater net gains.

Closely linked to both of these is a third rationale:

3. *Winning durable public support for the carbon policy:* A cap on carbon emissions will increase the prices of gasoline, electricity, and other commodities in proportion to their carbon content. A cap that does not have this effect is not a binding cap. For political sustainability, it is important to anticipate public reactions to higher fuel prices and to craft a policy design that voters will accept or better yet welcome. Cap-and-dividend's egalitarian basis and visible income effects may improve the prospects for the carbon policy to survive over the long haul.

Precedents

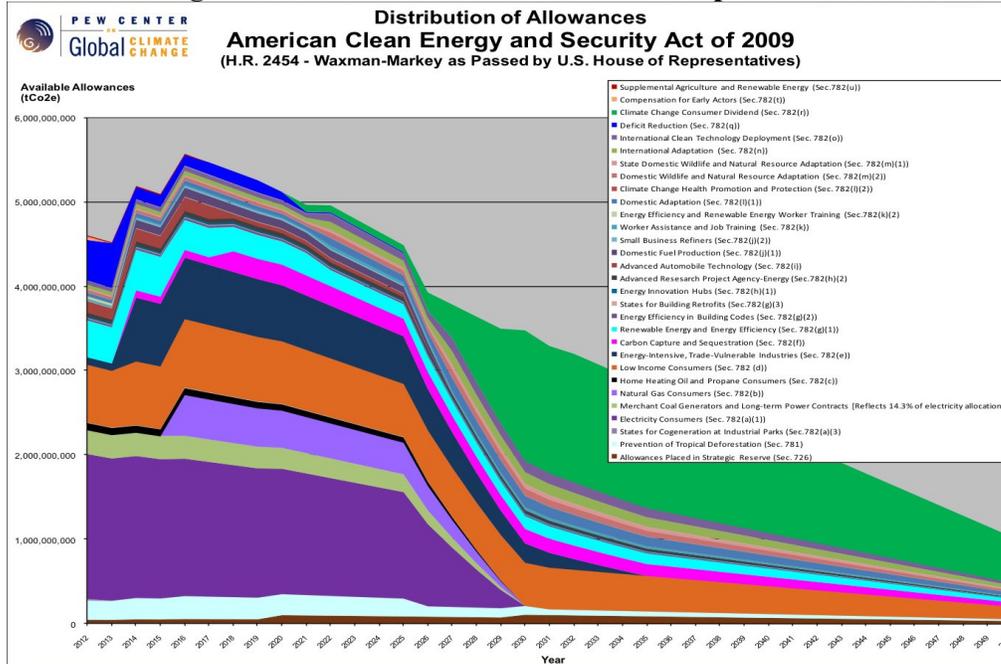
There are at least two precedents for a cap-and-dividend policy: (i) the Alaska Permanent Fund, which distributes dividends from oil revenues equally to all residents of that state; and (ii) the "Climate Change Consumer Refund Account" provision of the American Clean Energy and Security Act (ACES, also known as the Waxman-Markey bill) now before Congress.

The *Alaska Permanent Fund*, established in 1976 under the leadership of Governor Jay Hammond, recycles oil-extraction royalties to the public as equal per-person dividends. Last year the dividend per capita amounted to \$2,069 (in addition to a one-time "resource rebate" of \$1,200). Apart from operationalizing the core principle of common and equal ownership of natural wealth, the Fund demonstrates that it is administratively feasible for state governments to define eligibility and disburse dividends to residents. A major difference, of course, is that the Alaska Permanent Fund gives residents an incentive to support higher oil extraction, whereas cap-and-dividend results in the opposite incentive: a tighter cap yields increased dividends (assuming inelastic demand for fossil fuels, i.e., a 10% increase in prices is associated with a less-than-10% reduction in demand, and hence higher total revenue).

The *Climate Change Consumer Refund Account* that is proposed in section 789(a) of the ACES bill provides that:

In each year after deposits are made to the Climate Change Consumer Refund Account, the Secretary of the Treasury shall provide tax refunds on a per capita basis to each household in the United States that shall collectively equal the amount deposited into the Climate Change Consumer Refund Account.

Figure 1: Distribution of Allowances Proposed in ACES



In Figure 1 (pasted from Judi Greenwald’s presentation to the first EAAC meeting on July 1, 2009), the refund is depicted the green area in the top layer of the graph (labeled “Climate Change Consumer Dividend”); it begins in the 2020s and grows to about 50% of allowance value in the 2030s and 2040s. While ACES is not a cap-and-dividend policy in its initial years, it substantially morphs into one over time.

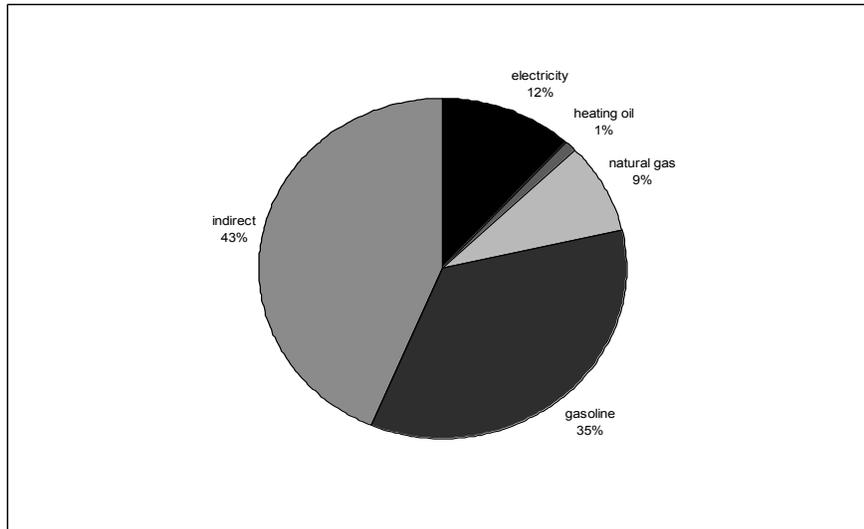
Distributional impacts

The gross cost to a household from carbon pricing is a function of the amount of fossil carbon embodied in the production and distribution of the goods and services it consumes (the household’s “carbon footprint”). Based on data from the 2003 Consumer Expenditure Survey, the 2003 Input-Output Tables and the 2002 Benchmark Input-Output Tables, my colleague Matt Riddle and I have calculated carbon footprints for median households in each state.¹ The breakdown across expenditure categories for the median California household is shown in Figure 2.²

¹ James K. Boyce and Matthew E. Riddle, “Cap and Dividend: A State-by-State Analysis,” Amherst, MA: Political Economy Research Institute and Portland, OR: Economics for Equity and the Environment Network, August 2009, Figure 3. Available at http://www.peri.umass.edu/fileadmin/pdf/other_publication_types/green_economics/CAP_DIVIDEND_states.pdf.

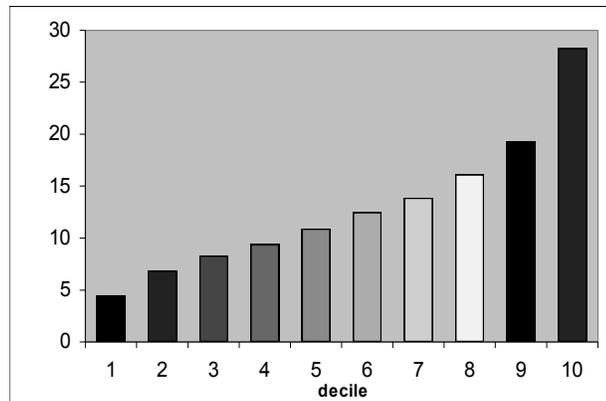
² Compared to the median household nationwide, in California the median carbon footprint has higher shares of gasoline and indirect (non-fuel goods and services) consumption (35% and 43% versus 26% and 37%, respectively, nationwide) and a lower share of electricity (12% versus 25% nationwide).

Figure 2: Carbon Footprint by Expenditure Category: Median CA Household



Because lower-income households generally consume less than higher-income households, they typically have smaller carbon footprints. Differences across income brackets at the national level are shown in Figure 3. In the highest decile, carbon emissions per capita are roughly six times greater than in the lowest decile.³ Calculations at the state level for California would show a similar pattern (we should do them).

Figure 3: Carbon Footprint by Income Decile
(metric tons CO₂ per capita; nationwide)



Source: Boyce and Riddle (2009), Figure 2a.

³ As a *share* of their income, however, the poor consume more carbon than the rich – that is, more carbon per dollar. For this reason, putting a price on carbon is regressive in and of itself, hitting the poor harder than the rich.

Because gross costs to households are based on their carbon footprints, while dividends are paid equally to all, the net impact of cap-and-dividend is distributionally progressive. Table 1 illustrates this point, showing how California households would be affected by a national cap-and-dividend policy with a permit price of \$25/ton carbon dioxide, 100% of permits auctioned, and 80% of auction revenue returned as dividends.

Table 1: Impact of National Cap-and-Dividend Policy on California Households by Income Decile
(\$25/tCO₂; 100% auction; 80% of revenue distributed as dividends)

Per capita income decile	Per capita income	\$ per capita			% of income		
		Carbon charge	Dividend	Net impact	Carbon charge	Dividend	Net impact
1	3788	108	386	278	2.9%	10.2%	7.3%
2	6545	149	386	237	2.2%	5.9%	3.6%
3	9062	179	386	207	1.9%	4.3%	2.3%
4	11752	207	386	179	1.7%	3.3%	1.5%
5	14841	236	386	150	1.5%	2.6%	1.0%
6	18603	268	386	118	1.4%	2.1%	0.6%
7	23494	305	386	81	1.2%	1.6%	0.3%
8	30469	354	386	32	1.1%	1.3%	0.1%
9	42186	426	386	-40	0.9%	0.9%	-0.1%
10	72895	593	386	-207	0.8%	0.5%	-0.3%

Source: Boyce and Riddle (2009, Tables 3, 4, 5 & A.1).

Lower-income deciles see substantial net benefits; middle-income deciles are “kept whole” with dividends more than offsetting the impact of higher fuel prices; and the top two deciles see net costs. Overall, roughly eight in ten California households come out ahead in monetary terms – without counting the environmental benefits that are the carbon policy’s main objective.

A California-only cap-and-dividend policy would yield somewhat different numbers than a national policy, even with the same carbon price and same revenue-allocation parameters, among other reasons because (i) the carbon footprint of the average California resident is below the national average, largely due to energy efficiency policies that have reduced per capita electricity consumption, so Californians fare better than average in a nationwide policy; and (ii) imports and exports (at the state level, i.e. from/to out-of-state) account for a bigger fraction of consumption and carbon emissions, respectively, than at the national level. All else equal, the former would result in lower net benefits than those reported in Table 1, while the latter would result in higher net benefits. But the broad pattern would persist: lower-income households gain, the middle class is protected, and upper-income groups bear a net cost.

Outcomes for individual households could differ from these broad patterns. In any income bracket, those who respond more strongly to the market price signals produced by the cap will fare better than those who do not curb consumption of fossil fuels. Upper-

income households with carbon footprints below the norm for their bracket could get positive net benefits; lower and middle-income households with disproportionately large carbon footprints could come out behind.

Criticisms

Criticisms of dividends fall into three classes: (i) other priorities for revenue (or allowance value) allocation; (ii) universal coverage versus targeted beneficiaries; and (iii) regional disparities.

1. *Other priorities* include all non-dividend allocations of allowance value whether via free permits or auction revenue uses. Some of these are transitional in nature: compensation and at least some investment functions are in this category. Some are more permanent: general government revenue (and tax-shifting with the potential “double-dividend” efficiency gains) is in this category. In the case of transitional priorities, the policy mix between dividend and non-dividend allocations could change over time with the share allocated to dividends gradually increasing, as in ACES.
2. *Universal coverage* is sometimes criticized on the grounds that dividends would be received by people who “don’t need them.” The Center for Budget and Policy Priorities has proposed instead that dividends be targeted to low-income households.⁴ The provision for refunds to low-income consumers in ACES (Section 782(d)) embodies this approach. Targeted payments may be viewed as an adequate response to the compensation rationale for dividends. But they do not respond to the common ownership rationale. In addition, universal coverage may have political appeal; witness the durable public support for Social Security. Means-testing also would impose the extra administrative costs.
3. *Regional disparities* result from cap-and-dividend when carbon footprints differ by location. At the national level, inter-state disparities in net impact are modest, and much smaller than those of many other federal policies including defense spending and farm programs.⁵ Within California, differences in the carbon-intensity of the electricity supply would contribute to regional disparities, but these are modest since electricity accounts for only 12% of the median household’s carbon footprint (see Figure 1). Any regional disparities arise from carbon pricing – not from dividends – so they are equally relevant for other policies on allocation of allowance value.

⁴ Robert Greenstein *et al.*, “Designing Climate-Change Legislation that Shields Low-Income Households from Increased Poverty and Hardship,” Washington, DC: Center for Budget and Policy Priorities, May 9, 2008. Available at <http://www.cbpp.org/files/10-25-07climate.pdf>.

⁵ Boyce and Riddle (2009), Figure 6.

Taxability of dividends

The taxability of dividends may affect decisions regarding the share of allowance value to be allocated to this purpose: if dividends are taxable, a fraction of the allowance value flows back to government, becoming available other uses; if they are non-taxable, a larger share of allowance value is needed for non-dividend uses to obtain the equivalent result.

One argument in favor of taxable dividends is that governments (local, state, and federal) will be impacted by higher fuel prices, as well as consumers. Nationwide, government consumption accounts for about 19% of carbon emissions: the federal government accounts for 6.5%, state and local governments for the other 12.5%.⁶ To protect government purchasing power or “keep government whole,” a return flow of carbon revenue is needed.

Because income taxation is progressive, larger taxable dividends are preferable on equity grounds to smaller non-taxable dividends with equal government revenue. Compared to taxable dividends, taking the government’s share “off the top” by reducing dividends is equivalent to a head tax: it would take an equal dollar amount from each person regardless of income level, and hence would be regressive.

⁶ James K. Boyce and Matthew Riddle, “Keeping the Government Whole: The Impact of a Cap-and-Dividend Policy for Curbing Global Warming on Government Revenue and Expenditure,” Amherst, MA: Political Economy Research Institute, Working Paper No. 188, November 2008, Table 1. Available at http://www.peri.umass.edu/fileadmin/pdf/working_papers/working_papers_151-200/WP188.pdf.