

DOUBLE DIVIDEND

by

Dale W. Jorgenson

Samuel W. Morris University Professor
Harvard University

<http://scholar.harvard.edu/jorgenson/>

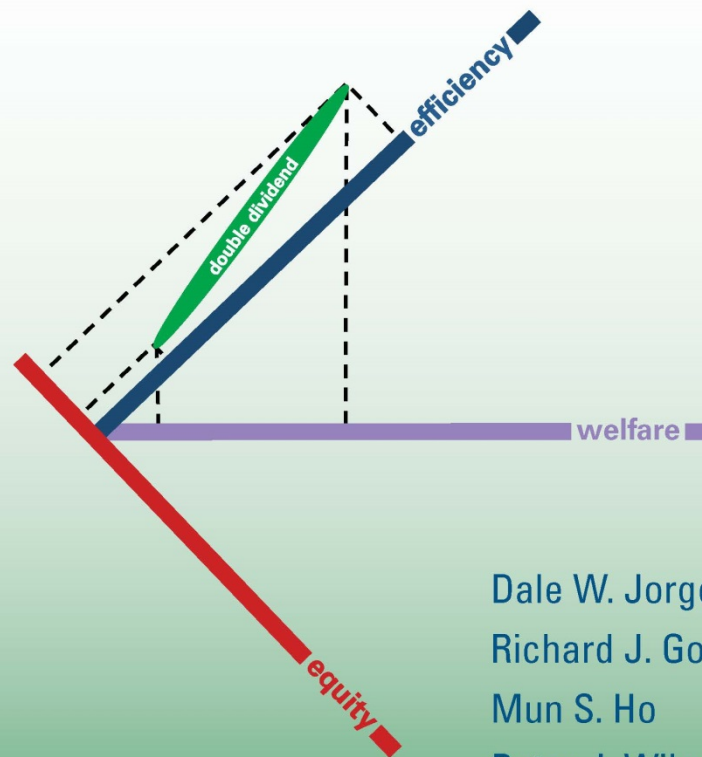
Global Harmonized Carbon Pricing: Looking Beyond Paris
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YALE CENTER FOR THE STUDY OF GLOBALIZATION



DOUBLE DIVIDEND

Environmental Taxes and Fiscal
Reform in the United States



Dale W. Jorgenson
Richard J. Goettle
Mun S. Ho
Peter J. Wilcoxon

DOUBLE DIVIDEND

Jorgenson, Goettle,
Ho, and Wilcoxon



DOUBLE DIVIDEND

- In Environmental Economics the Standard Approach to Policy Evaluation Is to Rank Policies by Differences between Benefits and Costs.
- This Has Led to a Search for Benefits, For Example, in the Widely Cited *Stern Review of the Economics of Climate*, for the British Government.
- In the Contentious Debate that Has Followed, the Most Persuasive Argument for Climate Policy Has Been Overlooked: The Reduction of Cost to Zero.
- Careful Design of Climate Policies Makes It Possible to Attain Environmental Goals, Slowing Climate Change, while Improving Economic Performance, the *Double Dividend* of the Title.

SOCIAL WELFARE

Social Welfare Function:

$$W(u, x) = \ln \bar{V} - \gamma(x) \left[\frac{\sum_{k=1}^K m_0(p, A_k) |\ln V_k - \ln \bar{V}|^{-\rho}}{\sum_{k=1}^K m_0(p, A_k)} \right]^{-1/\rho}$$

Utilitarian Case:

$$\ln \bar{V} = \frac{\sum_{k=1}^K m_0(p, A_k) \ln V_k}{\sum_{k=1}^K m_0(p, A_k)} = \ln p' \left(\alpha_p + \frac{1}{2} B_{pp} \ln p \right) - D(p) \frac{\sum_{k=1}^K m_0(p, A_k) \ln \frac{M_k}{m_0(p, A_k)}}{\sum_{k=1}^K m_0(p, A_k)}.$$

Egalitarian Case:

$$\gamma(x) = \left\{ \frac{\sum_{k=1}^K m_0(p, A_k)}{\sum_{k=1}^K m_0(p, A_k)} \left[1 + \left[\frac{\sum_{k=1}^K m_0(p, A_k)}{m_0(p, A_k)} \right]^{-(\rho+1)} \right] \right\}^{1/\rho}$$

where:

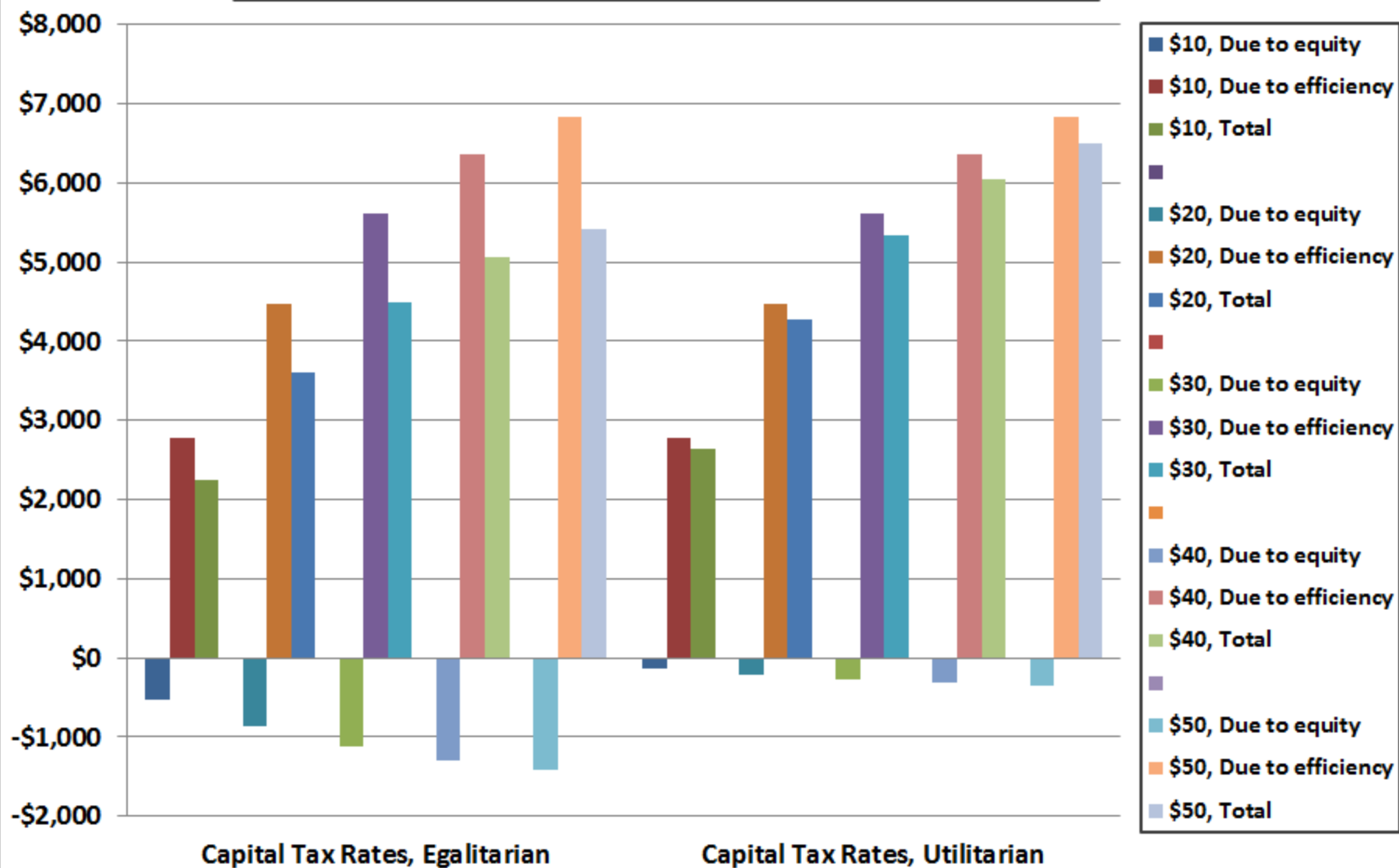
$$m_0(p, A_j) = \min_k m_0(p, A_k), \quad (k = 1, 2, \dots, K).$$

Social Expenditure Function:

$$\ln M(p, W) = \frac{1}{D(p)} \left[\ln p' \left(\alpha_p + \frac{1}{2} B_{pp} \ln p \right) - W \right] + \ln \left[\sum_{k=1}^K m_0(p, A_k) \right].$$

Social Welfare Changes, Capital Tax Rates

\$(2005) Billions



Social Welfare Changes, Labor Tax Rates \$(2005) Billions



DOUBLE DIVIDEND: SUMMARY

- A Double Dividend is a Reduction in Carbon Emissions and an Improvement in Economic Performance.
- The Double Dividend is Based on Substitution of a Carbon Tax for Capital Income Taxes.
- Policy Evaluation Compares a Base with No Change in Policy with Alternative Cases Involving a Carbon Tax.
- The Economic Impact of a Policy Change Is a Money Measure of the Change in Social Welfare.
- The Change in Social Welfare Can Be Divided between Efficiency and Equity.

