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“Lobbying, family concerns and the lack
of political support for estate taxation”

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**Lobbying, family concerns and the lack
of political support for estate taxation**

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Abstract

We provide an explanation for why estate taxation is surprisingly little used over the world, given the skewness of the estate distribution. Taxing estates implies meddling with intra-family decisions, which may be frowned upon by many. At the same time, the concentration of estates means that a low proportion of the population stands to gain a lot by decreasing estate taxation. We provide an analytical model, together with numerical simulations, where agents bequeathing large estates make monetary contributions that are used to play up the salience of the encroachment aspects of estate taxation on family decisions in order to decrease its political support.

Keywords: estate taxation, family values, political economy, lobbying, Kantian equilibrium.

JEL classifications: D72, H31

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1 Introduction

Whereas wealth inequality has, on the whole, trended downwards in the 20th century, we have recently witnessed sharp reversals in a number of countries, the most striking example being the United States.¹ Moreover, the distribution of inherited wealth is much more unequal than that of wealth in general. Given the extreme skewness of the distribution of inherited wealth, one would assume that a majority of households are in favor of financing part of public expenditure/redistribution with a tax on inheritance. Yet, such a tax is not popular and one rather observes a continuous erosion of wealth transfer taxation in many OECD countries, and especially in the U.S.² How to explain this apparent paradox is the question at the heart of this paper.

Focusing on the U.S., our line of explanation relies on the observations that a small number of very wealthy individuals make large contributions to think tanks and lobby groups whose objective is to repeal the federal estate tax, and that these groups often underscore the fact that estate taxation meddles with intra-family decisions. As Tabarrok (2012) writes: «So long as men are mortal, wealth must be transferred between the generations and so long as parents care for their children, the dominant means of doing so will be through family inheritance. The transference of wealth through family benefits bequeather and heir, strengthens family ties, and increases long-term savings. When the state intervenes in this process, it increases its coffers at the expense of the smooth operation of family, society, and economy». Cunliffe et al (2012) further state that “inheritance taxes are viewed with suspicion because they threaten family solidarity and unity, at the especially sensitive time of the death of one of its members.”

Gratz and Shapiro (2005) and Lincoln et al (2006) describe “the campaign of the super wealthy to kill the estate tax”. These super wealthy have reported nearly half a billion dollars in lobbying expenditures from 1998 to 2006, and stand to save upward of 70 billion dollars in case of a repeal of the estate tax. They also finance think tanks and outside groups that produce “ad campaigns intended to sway public opinion against the estate tax” (Lincoln et al, 2006, p8). An example of such an outside group is The American Family Business Institute, a trade association of family business owners, farmers, and entrepreneurs. This and other organizations invest large amount

¹See Davies and Shorrocks (2000) and more recently Piketty and Zucman (2013).

²Cremer and Pestieau (2012).

of money at educating Congress, the media and the public about the costs of the estate tax in order to build pressure for permanent repeal.

The gist of our paper is that wealth concentration makes it possible and attractive for a small fraction of the population, the super wealthy, to play up the encroachment on family decisions of estate taxation in order to draw down its political support. We model this as a contribution game, where very rich people endow organizations whose objective is to increase the salience for voters of family concerns, and thus to dampen their support for estate taxation. To do so, we use the concept of Kantian equilibrium, and the modeling proposed by Roemer (2006, 2010). We obtain numerically that the majority chosen estate tax rate is significantly decreased at the Kantian equilibrium contribution game, and we provide some comparative statics analysis. A striking result we obtain is that average donation per contributor increases when fewer people contribute.

2 The model with exogenous salience of family values

We consider an economy with a continuum of individuals i who differ in their endowment w_i which is distributed according to the positively skewed c.d.f. $F(w_i)$, so that the average endowment, \bar{w} , is larger than the median one, w^{med} . Each individual has a child she cares for and allocates her endowment between consumption c_i and bequest b_i . The government taxes bequests at a proportional rate θ and uses the tax proceeds to produce an amount a of public good, with the function $a(\theta)$ given by the government budget constraint

$$a = \theta \int b_i dF(w_i). \quad (1)$$

The utility of a parent is given by

$$U_i = u(c_i) + v(d_i) + a(\theta) - \beta\varphi(\theta), \quad (2)$$

where $u(c_i)$ is the utility obtained from one's own consumption and $v(d_i)$ is the utility derived from the endowment of the unique child, with both functions increasing and concave.³ The last term in (2) reflects the salience

³This specification is often used in overlapping generations models where individuals are concerned with their own consumption and the initial endowment their children will

of the concerns that estate taxation encroaches on family decisions (“family concerns” from now on). This term is the product of the salience of this dimension, measured by $\beta \geq 0$, and of the concerns themselves, measured by the function φ which is increasing and convex in θ . This formulation embodies two assumptions: (i) the family concerns φ depend on the value of the estate tax rate, but not on the amount of tax paid by the individual, and (ii) the multiplicative form assumed between salience β and concerns φ means that all agents have identical disutility from the fact that estate taxation encroaches on intra-family decisions.

We study the following three stage setting. In the first stage, the parameter β is endogenously determined through the intensity of an advertising campaign of the wealthy, as described below in section 3. In the second stage, all parents vote over the value of the estate taxation rate θ . In the third stage, each parent chooses the amount of bequest b_i she wants to leave to her offspring, and then enjoys the amount of public good a obtained thanks to the government budget constraint (1). Children do not make any decision.

We solve the game by backward induction, starting with the choice of bequest b_i for given values of the estate taxation rate θ and of the salience of family values β .

2.1 Individual bequest choice

An individual with endowment w_i expects his child to have an endowment reflecting a process of regression towards the mean, plus the net-of-tax bequest that she leaves to her child, so that

$$d_i = \alpha w_i + (1 - \alpha)\bar{w} + b_i(1 - \theta),$$

while $c_i = w_i - b_i$.

The individual bequest is obtained by maximizing (2) with respect to b_i , which yields

$$\frac{\partial U_i}{\partial b_i} = -u'(c_i) + v'(d_i)(1 - \theta) \leq 0,$$

so that the individually optimal bequest level is affected by the estate tax rate θ (assumed exogenous at this stage) but does not depend on the salience of family concerns, β .

benefit from. A classic reference for this is Glomm and Ravikumar (1992). The component $v(d_i)$ can be justified by some form of imperfect altruism.

Assuming logarithmic utilities $u(\cdot)$ and $v(\cdot)$ from now on,⁴ the first-order condition (FOC) for b_i becomes

$$(1 - \theta)c_i \leq d_i.$$

Agents with a low endowment would prefer to leave a negative bequest, which is not allowed. To obtain the threshold parental endowment $\hat{w}(\theta)$ below which the individual optimal bequest is nil, we solve the following equation:

$$\frac{\partial U}{\partial b_i} \Big|_{b_i=0} = 0,$$

so that

$$\hat{w}(\theta) = \frac{(1 - \alpha)\bar{w}}{1 - \alpha - \theta}. \quad (3)$$

Note that $\hat{w}(\theta)$ increases with θ , with $\hat{w}(0) = \bar{w}$ and thus $\hat{w}(\theta) > \bar{w}$ when $\theta > 0$. Since $\bar{w} > w^{med}$, a minority of agents leave a bequest whether the tax on bequest is positive or nil. This is in accordance with stylized facts. Note that $\hat{w}(\theta)$ tends toward ∞ as θ tends towards $1 - \alpha$: nobody leaves bequest for $\theta \geq 1 - \alpha$.

When $w_i > \hat{w}(\theta)$, the FOC for an interior solution for bequests is

$$(w_i - b_i)(1 - \theta) = \alpha w_i + (1 - \alpha)\bar{w} + b_i(1 - \theta)$$

or

$$\begin{aligned} b_i^* &= \frac{w(1 - \theta - \alpha) - \bar{w}(1 - \alpha)}{2(1 - \theta)} \\ &= \frac{w}{2} - \frac{\alpha w + (1 - \alpha)\bar{w}}{2(1 - \theta)}, \end{aligned} \quad (4)$$

where a star denotes the individually optimal level of the variable. We then obtain that bequests increase with income and decrease with taxation: as taxation increases, the set of (rich) agents who leave a bequest shrinks and they all leave smaller bequests.

We now move backward to the second stage decision, namely majority voting over the tax rate θ

⁴This assumption is made for tractability and is quite innocuous, unlike the stronger assumption of additivity of $u(\cdot)$ and $v(\cdot)$ in U_i .

2.2 Voting over the estate tax rate

Since we have already established that a majority of voters (including the median income parent) never leave a bequest, whatever the values of θ and β , we immediately obtain that the Condorcet winning value of θ (i.e., the value that is preferred by a majority of voters over any other feasible value) is the one most-preferred by the individual with the median endowment, w^{med} .⁵ The FOC for her most-preferred estate tax rate, denoted by θ^V , is then given by

$$a'(\theta) - \beta\varphi'(\theta^V) \leq 0. \quad (5)$$

The decisive voter compares the marginal benefit of the estate tax (the increase in the amount of the public good a) with its marginal cost (in terms of the salience of family concerns). If family concerns of the estate tax have no salience ($\beta = 0$), the decisive voter chooses the value of θ that maximizes the tax proceeds. This value is interior since, as we have seen, no one leaves a bequest if $\theta \geq 1 - \alpha$. Assuming from now on that a is a concave function of θ , we obtain that this value is unique and we denote it by θ_{Laf} . It is straightforward that θ^V decreases as β increases. If the salience parameter β is large enough, the decisive voter may prefer no estate taxation at all, even though she does not contribute while she enjoys the public good.⁶

We now move to the first stage of the game where the salience of family concerns is determined.

3 The setting of the salience of family concerns

We now assume that the salience parameter β can be affected by the intensity with which voters are faced with messages (such as media reports, interviews, talk shows, etc.) stressing that estate taxation encroaches on intra-family decisions. These messages are produced by think tanks and similar organizations, which are funded by high income individuals. More

⁵Alternatively, we can show that preferences are single-crossing in θ (see Gans and Smart (1996)) so that the median income agent would remain decisive even if a majority of parents were to leave a bequest. The proof of this statement is available upon request from the authors.

⁶For simplicity, we assume in the rest of the paper that $\theta^V > 0$ (so that (5) holds with equality), in accordance with the numerical results obtained in the last section.

precisely, we assume that agents with an endowment above some exogenous value, denoted by \tilde{w} , contribute voluntarily to finance these organizations. We denote by e_i the contribution of an agent with endowment w_i , so that the per capita amount of contribution, \bar{e} , is given by

$$\bar{e} = \int_{\tilde{w}}^{\infty} e_i dF(w_i). \quad (6)$$

We do not model explicitly the process by which these contributions affect the salience of this issue, but rather assume that the salience parameter is an increasing and concave function of the per capita contribution, $\beta(\bar{e})$.

All agents with $w_i \geq \tilde{w}$ decide simultaneously how much to contribute, anticipating the impact of the resulting per capita contribution on the majority chosen estate tax rate. Our point in this paper is not to emphasize the free riding problem among rich agents in this contribution game. We rather concentrate on the Kantian equilibrium of this contribution game, as modeled by Roemer (2006, 2010). A Kantian equilibrium is such that no contributor would like to see all contributors (including himself) vary their (positive)⁷ contribution by the same (positive or negative) percentage.⁸ We write the utility function of a contributor i with endowment w_i as a function of her contribution e_i , the vector of all other individuals' contributions, e_{-i} , and of the common multiplicative factor r as

$$\begin{aligned} U_i(re_i, re_{-i}) &= \text{Log}(w_i - b_i^* - re_i) + a(\theta^V) \\ &\quad + \text{Log}(\alpha w_i + (1 - \alpha)\bar{w} + (1 - \theta^V)b_i^*) - \beta(\bar{e})\varphi(\theta^V), \end{aligned} \quad (7)$$

where θ^V is the majority chosen value of θ in the next stage, given by (5) with $\beta = \beta(r\bar{e})$ and where \bar{e} is given by (6). A vector of contributions e_i for all individuals i with $w_i \geq \tilde{w}$ is a Kantian equilibrium if the utility function (7) is maximized for all contributors when $r = 1$.

Two important comments are in order. First, the majority chosen value of θ is the one that emerges from voting when the salience parameter is $\beta(r\bar{e})$ for the decisive voter. At the same time, we assume that, when considering variations in their contribution to the lobbying campaign, the contributors do not

⁷There is always a trivial equilibrium where no one contributes, so that a proportional variation of the individual contributions does not change anything.

⁸We interpret the Kantian equilibrium concept as a cooperative norm: see Roemer (2010) and the references quoted there for a justification as well as a history of this concept in the economic literature, starting with Laffont (1975).

affect the salience of the family dimension of estate taxation for themselves, which explains why the last term of (7) is $\beta(\bar{e})\varphi(\theta^V)$ rather than $\beta(r\bar{e})\varphi(\theta^V)$. In other words, rich agents contribute in order to change the salience of the family issue for the decisive voter, but their contributions do not affect the salience of the issue for themselves (which would be weird). Observe that, at a Kantian equilibrium, all agents (including the contributors) share the same valence given by $\beta(\bar{e})$. One can view this situation as a long term equilibrium, where everybody is alike in the salience of family values, and where the salience of these values is supported by the contributing behavior of a fraction of high income individuals in society.⁹

Second, we assume that the bequest decision of agents with $w_i \geq \tilde{w}$ is not affected directly by the amount of contribution they make—i.e., that b_i^* is given by the FOC (4) for all agents.¹⁰ Given that the contribution of wealthy individuals is small compared to their wealth/bequest (see Lincoln et al, 2006), and that their marginal utility of consumption is already low and unlikely to be very much impacted by the relatively small contribution, this simplifying assumption seems quite innocuous. We verify the benign character of this assumption in our numerical simulations (see footnote 12).

Slightly abusing notation, we denote the majority chosen tax rate by $\theta^V(r\bar{e})$ to obtain

$$\frac{\partial \theta^V(r\bar{e})}{\partial r} = \bar{e}\theta^{V'},$$

with

$$\theta^{V'} = \frac{\beta'(r\bar{e})\varphi'}{a''(\theta) - \beta\varphi''} < 0,$$

by the FOC and SOC for θ^V .

⁹Alternatively, we could model the salience of the family issue for the contributors as $\beta(0)$ —i.e., as if contributors were immune to their own propaganda. We would then obtain that contributors would put less salience on the family dimension, at equilibrium, than the rest of the population. This would not change the function $\theta^V(r\bar{e})$ as long as $\tilde{w} > w^{med}$, since the median endowed agent would remain the decisive voter, with the same preferences as above.

¹⁰In the absence of this assumption, increasing all contributions e_i proportionately would decrease the bequests of all contributors (because this would increase the marginal utility cost of the bequest) and would affect the shape of the government budget constraint (1). This would make both the analytical and numerical solving of the Kantian equilibrium much more complex, without any comparable gain in intuition.

We then have

$$\frac{\partial U_i(re_i, re_{-i})}{\partial r} \Big|_{r=1} = -\frac{e_i}{c_i} + \bar{e}\theta^{V'} \left[a'(\theta^V) - \beta(\bar{e})\varphi' - \frac{b_i^*}{d_i^*} \right] = 0, \quad (8)$$

with $c_i = w_i - b_i^* - re_i$. The first term in (8) is the marginal utility cost of the contribution for agent i . The purpose of this contribution is to decrease the tax rate θ^V . This change decreases the public good amount (since, with $\beta > 0$, we have $a'(\theta^V) > 0$ —see (5) when it holds with equality), decreases the disutility due to family concerns and increases the after-tax bequest received by the child (the three terms in the square brackets). Using the FOC for θ^V , we can reformulate this condition as

$$\frac{\partial U_i(re_i, re_{-i})}{\partial r} \Big|_{r=1} = -\frac{e_i}{c_i} - \frac{b_i^*}{d_i^*} \bar{e}\theta^{V'} = 0. \quad (9)$$

The first two terms in the square bracket of (8) cancel out because the majority chosen value of θ equalizes the marginal disutility due to family considerations with the marginal increase in public good amount. As the first term of (9) is nil when no one contributes, we obtain by continuity that (9) is positive for small values of e_i provided that $b_i^* > 0$ and that $\varphi' > 0$ when $\theta = \theta^V(0)$: there is an incentive to contribute a positive amount, since the marginal cost of contributions tends to zero for very small contributions, while the benefit does not if the family concern function is sufficiently convex, and if the individual leaves a bequest at the tax rate that is majority chosen in the absence of contributions.¹¹

We obtain the following proposition.

Proposition 1 *At the Kantian equilibrium, the individual contribution is an affine and increasing function of income.*

Proof. Integrating e_i over $w_i \in [\tilde{w}, \infty[$ in (9), while making use of the FOC for b_i^* , we obtain that the Kantian equilibrium is such that

$$1 - \theta^V = -\theta^{V'} \int_{\tilde{w}}^{\infty} b_i dF(w_i),$$

while the FOC for e_i then simplifies to

$$e_i = \frac{-\bar{e}\theta^{V'}}{1 - \theta^V} b_i > 0,$$

¹¹This implies that \tilde{w} must be large enough so that this last condition is satisfied.

so that the contribution is the same fraction of the bequest for all contributors. Since bequests are an affine function of income (see FOC (4)), the individual contribution is an affine and increasing function of income as well. ■

We now report some numerical simulations.

4 Numerical results

We assume that the endowment is distributed according to a lognormal distribution with mean 60 and median 50 (roughly corresponding, in thousand dollars, to the US income distribution). We assume that $\alpha = 0.5$, so that the endowment of a child is a simple average of the parent's endowment and of the average endowment in the economy. We use the following functional forms for the family concerns, $\varphi(\theta) = 5\theta^2/2$, and for the salience function, $\beta(\bar{e}) = 0.1 + 15\bar{e}^{1/2}$. Numerical results are presented in Table 1

Table 1: Kantian allocations (monetary amounts in dollars)

\tilde{w}	$1 - F(\tilde{w})$	\bar{e}	$\beta(\bar{e})$	θ^V	Aver. e among contributors
-	-	-	0	13.5%	-
-	-	0	0.1	13.2%	-
81 500	20.9%	50	3.45	7.8%	239
150 000	3.4%	10	1.60	10%	290

The first numerical row in Table 1 simply assumes that $\beta = 0$ and reports the value of the proceeds-maximizing tax rate, θ_{Laf} , which is chosen by majority voting when $\beta = 0$ and equals 13.5%. The second row assumes that β is determined by the formula above where $\bar{e} = 0$, so that $\beta = 0.1$ —i.e., the salience of family concerns is slightly positive even in the absence of political contributions by richer people. The majority chosen tax rate then decreases slightly to 13.2%. The last two rows of Table 1 report the Kantian equilibrium for two exogenous values of the income threshold \tilde{w} above which agents contribute. The threshold of 81 500\$ (penultimate row) corresponds to the income level above which agents do leave a bequest when $\theta = 13.2\%$ (the value of θ^V without contributions). In that case, 20.9% of the population make a contribution, driving up the salience of the family dimension to 3.45, decreasing the estate tax rate to 7.8% and resulting in a per capita

contribution of 50\$. The average equilibrium donation among the contributors (last column of Table 1) is then 239\$. When the threshold income above which agents contribute is raised to 150 000\$ (so that only the top 3.4% of the income distribution play the Kantian contribution game), the per capita contribution drops to 10\$ for the whole population, the salience of the family concerns decreases to 1.6 and the majority chosen value of the estate tax rate increases to 10%.

Figure 1 plots the individual Kantian contribution as a function of income, for $\tilde{w} = 81\,500\$$ and $\tilde{w} = 150\,000\$$. Proposition 1 has established that the equilibrium contribution e_i^* is an affine (and increasing) function of income. We observe that all agents above \tilde{w} contribute less when \tilde{w} increases. Since they also represent a smaller fraction of the population, we then obtain that the per population capita contribution \bar{e} decreases. The intuition for why e_i is lower when \tilde{w} increases is that a given increase in the contribution of every contributor has a lower impact on θ^V when fewer agents contribute (because of a larger \tilde{w}), hence resulting in a lower Kantian level of contributions. At the same time, the smallest contribution among the contributors (corresponding to $w_i = \tilde{w}$) increases when \tilde{w} increases. This explains the counter-intuitive result that the average value of e_i per contributor actually increases (from 239\$ to 290\$) when \tilde{w} increases.¹²

Insert Figure 1 around here

5 Conclusion

We have presented an explanation for why estate taxation receives so little popular support even though most people would not bear this tax. This idea is based on the observations that many people see any wealth transfer tax as an encroachment on the free working of families and that this feeling is reinforced by an intense activity from organizations financed by contributions from the very wealthy. This is not the only explanation but it might be as convincing as others, such as the POUM (prospect of upward mobility)

¹²The individual contributions remain very low even for rich agents (2 000\$ at most for agents with a 500 000\$ income), so that our assumption that bequests are not directly affected by contributions is reasonable.

hypothesis, according to which relatively poor people oppose high rates of redistribution because of the anticipation that they or their children may move up the income ladder.

References

- [1] Benabou, R. and A. Ok, (2001), Social Mobility and the Demand for Redistribution: The Poup Hypothesis, *Quarterly Journal of Economics*, 116, 447-487
- [2] Cremer, H. and P. Pestieau (2012), The economics of wealth transfer taxation, in *Inherited Wealth, Justice and Equality*, edited by Guido Erreygers and John Cunliffe, Routledge
- [3] Cunliffe, J. G. Erreygers and A. Reeve (2012) The debate about inherited wealth and its taxation, in *Inherited Wealth, Justice and Equality*, edited by Guido Erreygers and John Cunliffe, Routledge.
- [4] Davies, J. B. and A. F. Shorrocks, (2000), The Distribution of Wealth, in A.B. Atkinson and F. Bourguignon (eds.) *Handbook of Income Distribution*, North-Holland Elsevier (2000): 605-75.
- [5] Gans J. and M. Smart, 1996, Majority voting with single-crossing preferences, *Journal of Public Economics*, 59, 219-237.
- [6] Glomm, G. and B. Ravikumar (1992) Public versus private investment in human capital: endogenous growth and income inequality, *Journal of Public Economy*, 1000, 818-834.
- [7] Graetz M. and I. Shapiro, 2005, *Death by a Thousand Cuts: The Fight over Taxing Inherited Wealth*, Princeton University Press.
- [8] Laffont, J.-J., 1975, Macroeconomic constraints, economic efficiency and ethics: An introduction to Kantian economics, *Economica* 42, 430-437.
- [9] Lincoln, T., C. Collins, and L. Farris, (2006), *Spending Millions to Save Billions, The Campaign of the Super Wealthy to Kill the Estate Tax*, Public Citizen and United for a Fair Economy, Washington, D.C. <http://www.citizen.org/documents/EstateTaxFinal.pdf>

- [10] Piketty, T. and G. Zucman, (2013), Capital is Back: Wealth-Income Ratios in Rich Countries 1700-2010, unpublished, Paris School of Economics
- [11] Roemer, J., 2006, Party competition under private and public financing: A comparison of institutions, *Advances in Theoretical Economics*, 6-1, 1-31.
- [12] Roemer, J., 2010, Kantian allocations, *Scandinavian Journal of Economics*, 112-1, 1-24.
- [13] Tabarrok, A., 2012, Death Taxes: Theory, History, and Ethics, *Essays in Political Economy*, Ludwig von Mises Institute, <http://mises.org/journals/scholar/deathtax.pdf>

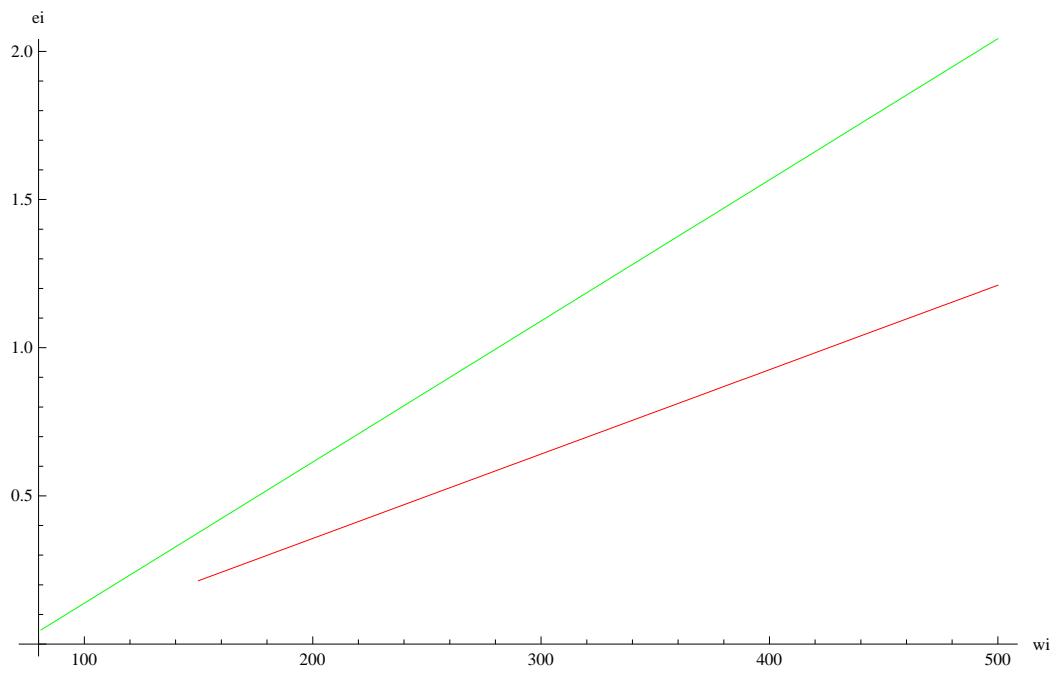


Figure 1 : Kantian individual contribution as a function of endowment,
 $\tilde{w} = 81\,500$ \$ (in green) and $\tilde{w} = 150\,000$ \$ (in red)

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