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Political economy of redistribution between traditional and modern families

Abstract

We analyse a model in which families may either be "traditional" single-earner with caring for the child at home or "modern" double-earner households using market child care. Family policies may favour either the one or the other group, like market care subsidies vs. cash for care. Policies are determined by probabilistic voting, where allocative and distributional impacts matter, both within and across groups. Due to its impact on intragroup distribution, both types of households are likely to receive subsidies. In early stages of development where most households are traditional, implemented policies favour them, though to a small extent. Net subsidies to traditional households are highest in some intermediate stage, which may explain the implementation of cash for care policies. Such policies will be tightened again in late stages of development, where the vast majority of voters come from modern households. Finally, in an environment in which many traditional households are not entitled to vote (immigrants who have not yet obtained citizenship), redistribution toward them may be abolished and in extreme cases even replaced by net transfers to modern households.

JEL-Codes: D130, H210, J130, J180, J220.

Keywords: redistribution, child care, subsidies, family policy, labour supply.

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1. Introduction

Countries differ in their policies toward subsidizing families, where we observe also some evolution over time. As households are heterogeneous, there exists a distributional conflict. Some benefits are mostly taken up by single earner families while others are meant to promote double earner families. In earlier times the focus was on household taxation, where policy reforms were mostly from joint to individual taxation. At present, joint taxation, being still in place in the US and Germany among the major OECD countries, yields a tax advantage for single earner families. More recently, many countries have introduced subsidies for market child care, which favours mostly double-earner families. Following pressure from conservative parties, some countries have introduced cash for care, granting benefits to non-users of subsidized market child care, where single earners are again the main beneficiaries. Finally, cash for care is heavily debated and seems to be under pressure when it is taken up mostly by immigrant families without voting rights. This seems to be the case in Norway where cash for care was introduced in 1998, then taken up by the vast majority of young families. Over the course of just 15 years, demand for cash for care has declined sharply, the remaining recipients being concentrated among low income immigrant families (Bungum and Kvande, 2013). After a similar evolution in Sweden, cash for care, implemented in 2008, with negative impacts on female employment, was abolished there in 2016 (Giuliani and Duvander, 2017). While the Swedish debate also pointed to facilitating integration by increasing labour force participation in combination with better opportunities to learn Swedish, we concentrate on distributional aspects. The stylized evolution looks like this: First, the majority of households are single earners, where double earners might be poorer or richer than single earners. Second, due to expansion of higher education, many households choose to be double earners, with higher income on average. Finally, an immigrant population enters which is not allowed to vote and consists disproportionally of single earner households. The current trend seems to abolish cash for care.

In this paper we study the distributional conflict between “traditional” and “modern” families in a political economy perspective. “Traditional” families are specified as single-earner households who prefer parental care to purchasing market care. “Modern” families are double-earner households. Group assignment is endogenous. It depends on beliefs on the quality of (own) parental vs. market care, wage rates of secondary earners, and exogenous household income. As there are always marginal types, policy measures in favour of one of the two groups will enlarge this group. Typical redistributive measures in favour of modern households are subsidies for market child care. Accordingly, traditional households would like to implement cash for care policies, and are also in favour of joint income taxation instead of individual taxation (not modelled here), as the tax burden will then be shifted to modern families. Though using the framing of choice between parental care and market child care, our model is not confined to families with infants. It applies to any heterogeneity in household production where imperfect substitutes can be purchased in the market.

For simplicity, we focus on the extensive margin of the choice of the secondary earner (see Apps and Rees, 2018, and Glomm and Meier, 2016, for a framework in which also the intensive margin matters). Empirical research has repeatedly argued that the vast majority of the labour supply elasticity is to be traced back to reactions on the extensive margin (Saez, 2002; Bargain et al., 2014). While higher wages for secondary earners generally drive up the demand for market care, higher incomes of primary earners may work in the opposite direction. For simplicity, we fix labor supply of the primary earner at full time – which makes sense in a cooperative household framework if the primary earner exhibits both higher wage rate in the market and lower productivity in parental child care.

The main goal of our analysis lies in determining the outcome of a democratic process on subsidies paid to traditional and modern families. With probabilistic voting, the implemented policy reflects the interests of all voters. As ideological concerns also matter, households who benefit most from family policy in terms of marginal utility of consumption will to a higher extent follow their material interest.

Given this property, political decisions are affected both by allocative and distributive concerns. While all households would favour a policy change that brings about a Pareto improvement, the relative strength of the distributional motive matters. It should be noted that uniform child care subsidies redistribute from the rich to the poor within the group that receives the subsidy while at the same time changing the mean consumption differential across groups. It transpires that the political equilibrium will generally display a compromise with partial redistribution toward the poorer group while subsidies to modern families remain below the efficient level.

Further insights can be gained by considering a simplified version in which heterogeneity exists only along the parental care quality dimension. In that event, only net transfers to modern and traditional families can be determined, while its components remain ambiguous. Closing the gender wage gap will then increase the transfer per (poorer) traditional family. Interestingly, the impact of increasing the share of modern families on the transfer to each traditional family is non-monotonic – being very low when the share of modern families is very small or very large, with higher levels in between. Moreover, a lower participation of traditional families in voting will unambiguously reduce net transfers to these families. These results may explain to some extent the intertemporal pattern of redistribution between modern and traditional families over the last decades.

Our contribution is related to different strands of the literature. First, the seminal political economy papers on redistribution (Browning, 1975; Meltzer and Richard, 1981) have focused on median voter models that tend to predict comparatively high levels of transfers unless the design of the choice problem allows for coalitions of groups that prefer low levels of government activity (Epple and Romano, 1996a,b). Using probabilistic voting instead reduces the size of these transfers by taking both efficiency aspects and interests of losers explicitly into account. Moreover, when varying relative group sizes, unrealistic jumps in the political outcome are ruled out. Second, papers dealing with optimal taxation of the family (Boskin and Sheshinski, 1983; Apps and Rees, 1999; Bastani et al., 2017) advocate low taxation of secondary earners so as to reduce distortions of labour supply, balancing allocative gains and the redistributive motive of the social planner, where the latter may work against subsidizing market child care. This message does not hold if wage taxation also implies Pigouvian elements so as to set appropriate incentives for household production, which may easily imply high taxes on secondary earners (Alesina et al., 2012; Meier and Rainer, 2015). Third, some papers deal with various normative justifications of subsidies that favour modern or traditional households (Apps and Rees, 2004; Blomquist et al., 2010; Domeij and Klein, 2013; Kemnitz and Thum, 2015; Apps and Rees, 2018; Meier and Glomm, 2016), stressing that market care subsidies are useful to reduce distortions of labour supply, while cash for care may counter distortions of child care quality choice induced by the design of the market care subsidy. Finally, there are a few political economy contributions focusing on support of market child care subsidies, which is either driven by positive impacts on the government budget or altruistic preferences (Bergstrom and Blomquist, 1996; Blomquist and Christiansen, 1999; Borck and Wrohlich, 2011).

The remainder of the paper is organized as follows. Section 2 introduces the basic model and explains the sorting behaviour of households. Section 3 discusses the setting with heterogeneity in three dimensions, showing properties of the chosen subsidy levels. The simplified version with heterogeneity in only one dimension in Section 4 allows us to study the evolution of redistribution between traditional and modern families in greater depth. The final Section 5 concludes and indications directions for further research.

2. Basic Model

Consider differentiated households. Each household has exogenous net income $(1-t)w_1 \geq 0$, comprising all sorts of capital income and typically the net wage of the primary earner who supplies labour inelastically full time. Additional income can be earned at net wage $(1-t)w_2$, where t is the income tax rate and $w \in [w_{min}, w_{max}]$ represents the gross wage, which is equal to marginal productivity. For simplicity, we will focus only on extensive labour supply decisions, which, according to Saez (2002) and Bargain et al. (2014), is the dominant force determining the labour supply elasticity. Hence, the household chooses either $l = 0$, which will then be called "traditional" or $l = 1$, which will then be called "modern".

Each household has a child of infant age. Child care is available in the market at price p and quality q. Alternatively, the household can take care of the child at own quality $\pi \in (0,\infty)$. Households are differentiated according to their primary income w_1, their secondary wage rate w_2 and their child care quality π. One time unit of child care needs to be provided, either by "leisure" $(1-l) \in \{0,1\}$ in the household or through buying units in the market. Market care is subsidized at rate σ, reducing its price to $(1-\sigma)p$. Households that do not purchase market care receive the cash for care benefit b. With total time endowment being equal to unity and c representing consumption the budget equation reads

$$c = (1-t)w_1 + (1-t)w_2 l + b(1-l) - (1-\sigma)pl. \tag{1}$$

Let the preferences of the household be given by the strictly concave utility function $U(c,z)$ where $z = ql + \pi(1-l)$ is the productivity index of child care. To keep the model tractable we use a Cobb-Douglas specification

$$U = \alpha \log c + \beta \log z, \tag{2}$$

with $\alpha,\beta > 0$.

The Lagrangean is

$$L = \alpha \log[(1-t)w_1 + (1-t)w_2 l + b(1-l) - (1-\sigma)pl] + \beta \log[ql + \pi(1-l)] + \lambda_1 l + \lambda_2(1-l). \tag{3}$$

For traditional households, we obtain $c_T = (1-t)w_1 + b$ and $z_T = \pi$, associated with indirect utility $V_T = \alpha \log((1-t)w_1 + b) + \beta \log(\pi)$. Modern households consume $c_M = (1-t)(w_1 + w_2) - (1-\sigma)p$ and achieve child quality $z_M = q$, arriving at indirect utility $V_M = \alpha \log((1-t)(w_1 + w_2) - (1-\sigma)p) + \beta \log(q)$.

Hence, there is a critical value of household productivity $\tilde{\pi}(w_1, w_2, b, \sigma, t)$ such that $V_T(\cdot) > V_M(\cdot) \Leftrightarrow \pi > \tilde{\pi}$, given by

$$\tilde{\pi} = q\left(\frac{c_M}{c_T}\right)^{\frac{\alpha}{\beta}}. \tag{4}$$

The properties of the threshold function in (4) are described in Lemma 1.

Lemma 1: *For any given parameter set with* $w_1 > 0$ *and* $(1-t)(w_1 + w_2) - (1-\sigma)p > 0$*, the threshold* $\tilde{\pi}$ *is unique and always lies in the interior, where households with higher household productivity* π *stay traditional (*$l = 0$*) and households with lower household productivity choose to be modern,* $l = 1$*. The threshold increases in the wage of the secondary earner* w_2*. It decreases in exogenous income* w_1 *if and only if* $(1-t)w_2 - (1-\sigma)p > 0$*. Moreover, the threshold decreases with increasing net price of market child care* $(1-\sigma)p$ *and decreases with higher cash for care subsidy* b*. Further, it increases with a higher tax rate* t*.*

Proof. See Appendix A. ■

Lemma 1 can be interpreted as follows. Given that both the modern and the traditional strategy are feasible, the household's care productivity, which counts only for the traditional strategy, is crucial. With extremely low household productivity, households do better by purchasing superior market care. Conversely, if households display extremely high levels of productivity, no income gain from becoming modern can offset the lower child quality.

Notice that indifference between the two strategies can occur (i) if $c_T < c_M$ and $\pi > q$, (ii) if $c_T > c_M$ and $\pi < q$ and (iii) if $c_T = c_M$ and $\pi = q$. The third case can arise if and only if $(1-t)w = (1-\sigma)p$, that is, if the secondary earner's net wage just equals the net price of market child care. The first scenario occurs for the most likely case in which the secondary earner's net wage more than offsets the net cost of market child care. In that event, marginal households will display a care productivity that exceeds the level available in the market. As marginal utility from consumption is then higher for traditional households, increasing income makes the traditional role more attractive, which is translated into a lower threshold productivity. Conversely, in case (ii), consumption is higher with staying traditional due to low productivity of the secondary earner in the labour market. In that event, increasing the first earner's income makes the modern strategy comparatively more attractive due to higher marginal utility from consumption, increasing the threshold household productivity.

The other comparative static results are obvious as all policy measures aimed at improving the income of only one group makes marginal households inclined to join that group.

3. Heterogeneity in three dimensions

Consider a continuum of households with Lebesgue measure 1. Parental quality, π, gross primary income, w_1, and the wage of the secondary earner, w_2, are distributed across agents according to the joint probability density function $f(\pi, w_1, w_2)$. In general, we do not make any restriction on the possible correlation between these three parameters, but we later on pay special attention to a few specific cases. In the following, we suppress boundaries of integration for the sake of keeping the notation simple.

The budget constraint of the government is

$$\int\int\int_{\pi<\tilde{\pi}} t(w_1+w_2) f(\pi, w_1, w_2)\, \mathrm{d}\pi\, \mathrm{d}w_1 \mathrm{d}w_2 + \int\int\int_{\pi>\tilde{\pi}} t w_1 f(\pi, w_1, w_2)\, \mathrm{d}\pi\, \mathrm{d}w_1 \mathrm{d}w_2 \quad (5)$$

$$-\sigma p|M| - |T|b \geq R,$$

where shares of traditional and modern households are

$$|T| = \int\int\int_{\pi > \tilde{\pi}} f(\pi, w_1, w_2)\, \mathrm{d}\pi\, \mathrm{d}w_1 \mathrm{d}w_2, \tag{6}$$

$$|M| = \int\int\int_{\pi < \tilde{\pi}} f(\pi, w_1, w_2)\, \mathrm{d}\pi\, \mathrm{d}w_1 \mathrm{d}w_2, \tag{7}$$

and R is a tax revenue requirement that does not enter the individuals' utility function. When it is set equal to zero, tax policy is purely redistributive.

The outcome of the vote is predicted to be determined by probabilistic voting, which is tantamount to having a Benthamite social planner, where all households within a group have to be treated in a uniform fashion. The social planner maximizes welfare with respect to the choice of uniform subsidies that differ only across groups. This can be interpreted as representing the outcome of a probabilistic voting process with two parties choosing a political platform and voters whose choice is governed additionally by ideological concerns. Considering the standard scenario in which all voters have identical political power, this framework has a unique equilibrium in which both parties converge to the same platform. This political equilibrium platform maximizes the Benthamite social welfare function (see Coughlin and Nitzan, 1981; Persson and Tabellini, 2000).

Denoting the shadow price of public funds by λ, the planner's problem is

$$\begin{aligned}\max_{\sigma,b} W = \; & \int\int\int_{\pi < \tilde{\pi}} V_M(\pi, w_1, w_2) f(\pi, w_1, w_2)\, \mathrm{d}\pi\, \mathrm{d}w_1 \mathrm{d}w_2 \\ & + \int\int\int_{\pi > \tilde{\pi}} V_T(\pi, w_1, w_2) f(\pi, w_1, w_2)\, \mathrm{d}\pi\, \mathrm{d}w_1 \mathrm{d}w_2 \\ & + \lambda \Bigg[\int\int\int_{\pi < \tilde{\pi}} t(w_1 + w_2) f(\pi, w_1, w_2) \mathrm{d}\pi\, \mathrm{d}w_1 \mathrm{d}w_2 \\ & \quad + \int\int\int_{\pi > \tilde{\pi}} t w_1 f(\pi, w_1, w_2)\, \mathrm{d}\pi\, \mathrm{d}w_1 \mathrm{d}w_2 - \sigma p |M| - b|T| - R \Bigg].\end{aligned} \tag{8}$$

The first derivatives are

$$\begin{aligned}\frac{\partial W}{\partial \sigma} = & \int\int\int_{\pi < \tilde{\pi}} \frac{\partial V_M}{\partial \sigma} (\pi, w_1, w_2) f(\pi, w_1, w_2)\, \mathrm{d}\pi\, \mathrm{d}w_1 \mathrm{d}w_2 \\ & + \int\int \frac{\partial \tilde{\pi}}{\partial \sigma} [V_M(\tilde{\pi}, w_1, w_2) - V_T(\tilde{\pi}, w_1, w_2)] f(\tilde{\pi}, w_1, w_2) \mathrm{d}w_1 \mathrm{d}w_2\end{aligned} \tag{9}$$

$$+\lambda\left\{\int\int\frac{\partial\tilde{\pi}}{\partial\sigma}tw_2 f(\tilde{\pi},w_1,w_2)\mathrm{d}w_1\mathrm{d}w_2 - p|M| + \int\int\frac{\partial\tilde{\pi}}{\partial\sigma}[b-\sigma p]f(\tilde{\pi},w_1,w_2)\mathrm{d}w_1\mathrm{d}w_2\right\}$$

$$=\int\int\int_{\pi<\tilde{\pi}}\left[\frac{\partial V_M}{\partial\sigma}(\pi,w_1,w_2)-\lambda p\right]f(\pi,w_1,w_2)\,\mathrm{d}\pi\,\mathrm{d}w_1\mathrm{d}w_2$$

$$+\lambda\int\int\frac{\partial\tilde{\pi}}{\partial\sigma}[tw_2+b-\sigma p]f(\tilde{\pi},w_1,w_2)\mathrm{d}w_1\mathrm{d}w_2;$$

$$\frac{\partial W}{\partial b}=\int\int\int_{\pi>\tilde{\pi}}\frac{\partial V_T}{\partial b}(\pi,w_1,w_2)f(\pi,w_1,w_2)\,\mathrm{d}\pi\,\mathrm{d}w_1\mathrm{d}w_2 \qquad (10)$$

$$+\int\int\frac{\partial\tilde{\pi}}{\partial b}[V_M(\tilde{\pi},w_1,w_2)-V_T(\tilde{\pi},w_1,w_2)]f(\tilde{\pi},w_1,w_2)\mathrm{d}w_1\mathrm{d}w_2$$

$$+\lambda\left\{\int\int\frac{\partial\tilde{\pi}}{\partial b}tw_2 f(\tilde{\pi},w_1,w_2)\mathrm{d}w_1\mathrm{d}w_2 - |T| + \int\int\frac{\partial\tilde{\pi}}{\partial b}[b-\sigma p]f(\tilde{\pi},w_1,w_2)\mathrm{d}w_1\mathrm{d}w_2\right\}$$

$$=\int\int\int_{\pi>\tilde{\pi}}\left[\frac{\partial V_T}{\partial b}(\pi,w_1,w_2)-\lambda\right]f(\pi,w_1,w_2)\,\mathrm{d}\pi\,\mathrm{d}w_1\mathrm{d}w_2$$

$$+\lambda\int\int\frac{\partial\tilde{\pi}}{\partial b}[tw_2+b-\sigma p]f(\tilde{\pi},w_1,w_2)\mathrm{d}w_1\mathrm{d}w_2.$$

The sequence of events looks as follows. First, households vote on political platforms (ρ,b,t). Due to rational expectations regarding the distribution of types as depicted by the density function $f(\pi,w_1,w_2)$, platforms will be considered only if they satisfy the budget constraint of the government (5) given optimal sorting of households. Second, knowing the policy vector (ρ,b,t), households decide on extensive labour supply of the secondary earner. A political equilibrium is then defined as a policy vector (ρ,b,t) that maximizes W subject to the conditions that (i) all households pick their individual max $\{V_T(\rho,b,t),V_M(\rho,b,t)\}$, and (ii) the allocation is feasible, hence satisfies the aggregate constraint (5).

In the following we assume that a unique optimum exists. As shown in the next section, this does not hold for any specification of the density function $f(\pi,w_1,w_2)$. Focusing on interior solutions, (9) and (10) are equal to zero. Multiplying (9) by $1/p$, recognizing that $\frac{\partial V_M}{\partial\sigma}\frac{1}{p}=\frac{\partial V_M}{\partial c_M}$ and $-\frac{\partial\tilde{\pi}}{\partial\sigma}\frac{1}{p}=\frac{\partial V_M/\partial c_M}{\partial V_T/\partial c_T}\frac{\partial\tilde{\pi}}{\partial b}$, adding up (9) and (10) and isolating λ gives

$$\lambda=\left[\int\int\int_{\pi<\tilde{\pi}}\frac{\partial V_M}{\partial c_M}(\pi,w_1,w_2)f(\pi,w_1,w_2)\,\mathrm{d}\pi\,\mathrm{d}w_1\mathrm{d}w_2\right. \qquad (11)$$

$$\left.+\int\int\int_{\pi>\tilde{\pi}}\frac{\partial V_T}{\partial c_T}(\pi,w_1,w_2)f(\pi,w_1,w_2)\,\mathrm{d}\pi\,\mathrm{d}w_1\mathrm{d}w_2\right]$$

$$/\left[1-\int\int\frac{\partial\tilde{\pi}}{\partial b}\left[1-\frac{\partial V_M/\partial c_M}{\partial V_T/\partial c_T}\right][tw_2+b-\sigma p]f(\tilde{\pi},w_1,w_2)\mathrm{d}w_1\mathrm{d}w_2\right].$$

Hence, the Lagrange multiplier λ is equal to average marginal utility of consumption if $\int\int\frac{\partial\tilde{\pi}}{\partial b}\left[1-\frac{\partial V_M/\partial c_M}{\partial V_T/\partial c_T}\right][tw_2+b-\sigma p]f(\tilde{\pi},w_1,w_2)\mathrm{d}w_1\mathrm{d}w_2=0$. It will fall short of average marginal utility if both $\frac{\partial V_M}{\partial c_M}<\frac{\partial V_T}{\partial c_T}$ and $tw_2+b-\sigma p>0$ hold at each indifference point. Deviations from average marginal utility occur due to positive or negative impacts via switching families, affecting the government budget constraint. Moreover, inspection of (9) and (10) reveals that for any interior solution the Lagrange multiplier lies between the two group-specific average marginal utilities.

The condition with respect to the subsidization rate σ can be interpreted as follows. Increasing that rate boosts the consumption of modern households, raising welfare by $\int\int\int_{\pi<\tilde{\pi}}\frac{\partial V_M}{\partial\sigma}(\pi,w_1,w_2)f(\pi,w_1,w_2)\,\mathrm{d}\pi\,\mathrm{d}w_1\mathrm{d}w_2$. The labour supply response of these users of market care could have an impact on their welfare, which is however zero for marginal users as they are indifferent between being a modern or traditional household, $V_M(\tilde{\pi},w_1,w_2)=V_T(\tilde{\pi},w_1,w_2)$ at any given $\tilde{\pi}(w_1,w_2)$. The budget deficit of the government changes according to (i) unchanged behavior of users of market care, represented by $\lambda p|M|$, and (ii) changes in the number of users. New users forgo the lump sum b when taking up the market care subsidy, $\int\int\frac{\partial\tilde{\pi}}{\partial\sigma}[b-\sigma p]f(\tilde{\pi},w_1,w_2)\mathrm{d}w_1\mathrm{d}w_2$, and also modify their tax payments as they increase the labor supply of secondary earners from zero to unity. Summarizing the terms in (9), (i) $\int\int\int_{\pi<\tilde{\pi}}\left[\frac{\partial V_M}{\partial\sigma}(\pi,w_1,w_2)-\lambda p\right]f(\pi,w_1,w_2)\,\mathrm{d}\pi\,\mathrm{d}w_1\mathrm{d}w_2$ expresses the relative intensity in voting according to material concerns, and (ii) $\lambda\int\int\frac{\partial\tilde{\pi}}{\partial\sigma}[tw_2+b-\sigma p]f(\tilde{\pi},w_1,w_2)\mathrm{d}w_1\mathrm{d}w_2$ shows the fiscal impact of households becoming new users of market care as $\frac{\partial\tilde{\pi}}{\partial\sigma}>0$. Regarding intensity to vote, $\int\int\int_{\pi<\tilde{\pi}}\left[\frac{\partial V_M}{\partial\sigma}(\pi,w_1,w_2)-\lambda p\right]f(\pi,w_1,w_2)\,\mathrm{d}\pi\,\mathrm{d}w_1\mathrm{d}w_2$ will be negative as long as single-earner households are comparatively poor in terms of consumption. This case occurs if we consider variation with respect to the wage of the secondary earner leaving the primary wage constant. However, this "redistributive" term could be negative if we consider variation in the primary wage keeping the wage of the secondary earner constant – recalling that income effects work so as to increase child care quality. Increasing labour supply raises the government budget surplus as long as the additional subsidy $\sigma p-b$ remains short of the tax payments of secondary earners. Switchers give up their access to cash for care while now paying higher taxes.

In the first-order condition (10) on the chosen subsidy of traditional families, the term $\int\int\int_{\pi<\tilde{\pi}}\left[\frac{\partial V_T}{\partial b}(\pi,w_1,w_2)-\lambda\right]f(\pi,w_1,w_2)\,\mathrm{d}\pi\,\mathrm{d}w_1\mathrm{d}w_2$ again expresses voting intensity (or redistributional concerns). Following the arguments from above, this term will be positive if those who take up the subsidy are poorer, e.g., considering secondary wage variations at given primary wage. But it might be negative if we consider variation of primary wages at given secondary wage. Further, some marginal households taking up cash for care forgo the market care subsidy and also reduce their tax payments as the labour supply of secondary earners falls to zero, adding up to $\int\int \frac{\partial\tilde{\pi}}{\partial b}[tw_2 + b - \sigma p]f(\tilde{\pi}, w_1, w_2)\mathrm{d}w_1\mathrm{d}w_2$. This term is negative as long as the average subsidy for marginal users of market care falls short of their tax payments of secondary earners. Hence, the key force to bring about a positive level of cash for care lies in the fact that poorer voters are less biased by ideological concerns owing to their high marginal utility of consumption.

Increasing benefits σp and b do not only reduce inequality within groups. They will also be employed to reduce inequality across groups. The outcome may display subsidies of both types while the absolute subsidy tends to be higher for that group that otherwise consumes less on average. Without marginal types whose reaction is associated with an efficiency cost, average marginal utility of consumption is equalized across groups. Thus, the political process works so as to reduce inequality.

It is not obvious, however, which group has lower average marginal utility of consumption in the absence of subsidies. Should the primary earner's incomes be similar for all households, where the main variation is across wages of secondary earners, modern households will be richer. Conversely, should wages of secondary earners be almost identical, households with higher income are more likely to stay traditional so as to exploit superiority in care productivity vs. the market.

Without subsidies, the marginal impact of switchers from traditional to modern style on the government budget surplus is unambiguously positive. The same is true as long as the market care subsidy minus the cash for care subsidy falls short of average secondary earners' tax payments of marginal users, $\int\int \frac{\partial\tilde{\pi}}{\partial \sigma}[tw_2 + b - \sigma p]f(\tilde{\pi}, w_1, w_2)\mathrm{d}w_1\mathrm{d}w_2 > 0$, and $\int\int \frac{\partial\tilde{\pi}}{\partial b}[tw_2 + b - \sigma p]f(\tilde{\pi}, w_1, w_2)\mathrm{d}w_1\mathrm{d}w_2 < 0$.

Proposition 1 collects the findings on the structure of politically determined subsidies. Any interior equilibrium could be characterized by three candidate structures: (i) equality of marginal utilities in combination with zero marginal impact of switchers, (ii) higher consumption of modern families on average in combination with a positive marginal impact of switchers from traditional to modern on the budget surplus, (iii) higher consumption of traditional families in combination with negative marginal impact of switchers from traditional to modern.

Proposition 1. *If the policy set is given by a uniform price subsidy of standard care* $0 \le \sigma p \le p$ *and a lump-sum subsidy* $b \ge 0$*, the possible structures of the outcome of probabilistic voting in an interior solution are characterized as follows:*

Either groupwise average marginal utilities are equal at such a point, associated with zero fiscal impact of switching from traditional to modern households by adapting either σ or b at the margin.

Otherwise, there is a richer group characterized by lower average marginal utility, and enlarging this group by adapting either σ or b in the appropriate direction is associated with a positive fiscal impact of switching households at the margin.

Proof. See Appendix B. ■

The message of Proposition 1 is as follows. The implementation of subsidies is driven by two considerations. One key motive is redistribution toward the disadvantaged group in terms of average consumption. That group is less affected by ideological concerns as it attaches higher value to increasing consumption as indicated by higher average marginal utility of consumption. Second, the fiscal impact of switching (marginal) households matters. As long as the benefit paid to modern families stays below average additional tax payments of secondary earners, switching from traditional to modern family style is associated with a budget surplus. In that situation average marginal utilities of consumption will not be equalized: consumption of traditional families on average will stay smaller.

Proposition 1 indicates that the outcome will balance efficiency and equity considerations. Equality of average marginal utility across groups will occur only accidentally, as this requires zero fiscal impact of switching households. The typical situation will exhibit higher average marginal utility of traditional households, remaining poorer in terms of consumption, associated with a positive fiscal impact of households switching from the traditional to the modern type. Redistributive measures in favour of traditional families will stop before average marginal utility is equalized due to losses in the government budget induced by such a policy. Noting that $tw_2 + b - \sigma p = 0$ is required at the individual level to achieve efficiency of family type choice (Glomm and Meier, 2016), the typical outcome entails on average too strong incentives to stay traditional.

The proposition also shows that a further outcome is conceivable as a political equilibrium. In earlier stages of development, characterized by low relative wages of secondary earners, traditional households may remain richer due to high wages of primary earners. This will occur in combination with a negative fiscal impact of switching individuals from traditional to modern. Such a negative impact may occur if market care subsidies exceed tax payments by secondary earners. Notice that if all exogenous incomes w_1 are identical and $w_2 < p$ always, the modern group is poorer in the situation without subsidies. Thus, in general, the redistributive motive can go in either direction.

4. One-dimensional heterogeneity

Trying to achieve additional insights, we abstract from issues related to redistribution within groups by considering differentiation limited to parental care productivity. Thus, all households share the same primary wage w_1 and the same secondary wage $w_2 > p$. Thus, the cake available for consumption becomes larger when households choose to become modern. Household consumption is only contingent on household strategy: $c_T = (1-t)w_1 + b$, $c_M = (1-t)(w_1 + w_2) - (1-\sigma)p$.

Net contributions occur if taxes paid exceed benefits received. Defining net contributions $\theta_M = t(w_1 + w_2) - \sigma p - R$ and $\theta_T = tw_1 - b - R$, the government budget constraint can be written as

$$[t(w_1 + w_2) - \sigma p]|M| + [tw_1 - b][1 - |M|] - R \tag{12}$$

$$= [t(w_1 + w_2) - \sigma p - R]|M| + [tw_1 - b - R][1 - |M|] = \theta_M|M| + \theta_T[1 - |M|] = 0.$$

Lemma 2 shows that only net contributions toward the budget can be identified.

Lemma 2. *Given any policy vector, the same allocation can be achieved by moving the tax rate and the subsidies in the same direction such that* $\Delta b = w_1\Delta t$ *and* $p\Delta\sigma = (w_1 + w_2)\Delta t$.

Proof. See Appendix C. ■

The lesson of Lemma 2 is that with uniform wage distribution, one instrument of redistribution is superfluous. Given the definition of net contributions, type-specific consumption is

$$c_T = w_1 - R - \theta_T; \tag{13}$$

$$c_M = w_1 + w_2 - p - R - \theta_M = w_1 + w_2 - p - R + \theta_T \frac{1 - |M|}{|M|}. \tag{14}$$

In the following, we take the net contribution of traditional households as measure of redistribution. Inserting the government budget equation simplifies the welfare maximization problem, predicting the outcome under probabilistic voting, to

$$\max_{\theta_T} W = \int_0^{\tilde{\pi}} U_M\left(w_1 + w_2 - p - R + \theta_T \frac{1-|M|}{|M|}, q\right) f(\pi) d\pi \tag{15}$$

$$+ \int_{\tilde{\pi}}^{\infty} U_T(w_1 - R - \theta_T, \pi) f(\pi) d\pi.$$

The first-order condition (assuming separable utility) is

$$\frac{dW}{d\theta_T}(\theta_T^*) = [1 - |M|]\left[\frac{\partial U_M}{\partial c_M} - \frac{\partial U_T}{\partial c_T}\right] - \frac{\theta_T^*}{|M|}\frac{\partial U_M}{\partial c_M}\frac{\partial |M|}{\partial \theta_T} \tag{16}$$

$$+\left[U_M\left(w_1+w_2-p-R+\theta_T^*\frac{1-|M|}{|M|},q\right)-U_T(w_1-R-\theta_T^*,\pi)\right]f(\tilde{\pi})\frac{\partial\tilde{\pi}}{\partial\theta_T}$$

$$=[1-|M|]\left[\frac{\partial U_M}{\partial c_M}-\frac{\partial U_T}{\partial c_T}\right]-\frac{\theta_T^*}{|M|}\frac{\partial U_M}{\partial c_M}\frac{\partial|M|}{\partial\theta_T}=0.$$

As will be demonstrated below, the net contribution of traditional households is always negative, $\theta_T^* < 0$. Then the first term $[1-|M|]\left[\frac{\partial U_M}{\partial c_M}-\frac{\partial U_T}{\partial c_T}\right] < 0$ expresses possible losses from increasing inequality – which will be opposed by traditional families showing a higher relative intensity in voting. Recalling that reducing the net benefit paid to traditional households will increase the share of modern households, $\frac{\partial|M|}{\partial\theta_T} > 0$, the second part $-\frac{\theta_T^*}{|M|}\frac{\partial U_M}{\partial c_M}\frac{\partial|M|}{\partial\theta_T} > 0$ reflects fiscal gains reducing the burden on modern households. In the optimum, these two impacts just offset each other. The impacts of changing types at the margin, described by $\left[U_M\left(w_1+w_2-p-R+\theta_T^*\frac{1-|M|}{|M|},q\right)-U_T(w_1-R-\theta_T^*,\pi)\right]f(\tilde{\pi})\frac{\partial\tilde{\pi}}{\partial\theta_T}$, cancel out because marginal types are indifferent between staying traditional or becoming modern.

The proof of Proposition 2 demonstrates that an interior optimum θ_T^* always exists. In the following we assume that W is strictly concave in θ_T at any candidate θ_T^*, assuring uniqueness. Proposition 2 shows that the political outcome will display some redistribution toward traditional families, while modern families remain richer.

Proposition 2. *In the uniform wage distribution setting, we always have partial redistribution toward traditional families,* $-(w_2-p)|M| < \theta_T^* < 0$.

Proof. See Appendix D. ■

Without redistribution, there is a potential redistributive gain from introducing marginal transfers to traditional households, where the fiscal cost would be negligible. With full equalization of consumption, achieved by setting $\theta_T = -(w_2-p)|M|$, marginal gains from redistribution vanish. At the same time, decreasing the benefit to traditional households would yield some fiscal surplus accruing to modern households. Therefore, the political outcome shows partial redistribution where further gains from additional marginal redistribution just match the value of its fiscal cost.

It is interesting to analyse how redistribution, as measured by θ_T^*, changes over the course of development. The typical feature of the evolution consists in an increasing share of secondary earners getting access to higher wages. The analysis is divided into three parts.

First, it is shown that the transfer to traditional families is small at the boundaries, when the share of modern families is either very small or very large.

Second, consider an increasing share of modern households at given wage rates of secondary earners. This may come about in a situation in which additional households get access to the higher wage, for example due to an increasing share of women obtaining a university degree.

Third, we also focus on increasing the wage of secondary earners, which may be interpreted as reducing wage inequality in the economy.

Proposition 3. *Given heterogeneity just in household productivities, $-\theta_T^*$, the net benefit paid to traditional families, converges to zero if the share of modern households is very small or very large,* $|M| \to 0$ or $|M| \to 1$.

Raising the higher share of modern households $|M|$ *at constant reaction term* $\frac{\partial |M|}{\partial \theta_T}$ *increases the net benefit paid to traditional families until the share of modern households reaches some threshold* $|\widetilde{M}| > 1/2$, *and (on average) declines thereafter.*

Raising the wage of secondary earners at given share of modern households $|M|$ *and constant reaction term* $\frac{\partial |M|}{\partial \theta_T}$ *increases the net benefit paid to traditional families.*

Proof. See Appendix E. ■

The insights of the proof of the proposition are as follows. With rising share of modern families, the impacts of reducing the net benefit paid to traditional families change as follows. First, the loss through less redistribution becomes weaker, as expressed by $-\left[\frac{\partial U_M}{\partial c_M} - \frac{\partial U_T}{\partial c_T}\right] > 0$. Second, the fiscal gain is also reduced, which counteracts the first impact, as shown by $\frac{\theta_T^*}{|M|^2}\frac{\partial |M|}{\partial \theta_T}\frac{\partial U_M}{\partial c_M} < 0$. It turns out that the net effect works toward more redistribution if modern families are a minority, $|M| < 1/2$, and toward less redistribution if modern families become a majority, $|M| > 1/2$. Third, marginal utility of consumption of modern families falls at any given transfer to traditional families. This increases losses from less redistribution and at the same time reduces the value of fiscal gains, as expressed by $\frac{[\theta_T^*]^2}{|M|^3}\frac{\partial |M|}{\partial \theta_T}\left[1 - |M| - \frac{\theta_T^*}{|M|}\frac{\partial |M|}{\partial \theta_T}\right]\frac{\partial^2 U_M}{\partial c_M^2} < 0$. Accordingly, this third channel tends to induce a higher net transfer to traditional families.

Directly reducing the wage inequality increases the transfer to traditional families because a higher wage of secondary earners increases the value of additional redistribution and decreases its cost through the declining marginal value of consumption of modern families.

In sum, these impacts unambiguously generate a higher net benefit to traditional families with rising share of modern households until the latter get into a majority position. Raising the share of modern households further until traditional households become extremely rare will reduce the transfer per capita to traditional households again.

According to Proposition 3, redistribution toward traditional families is particularly low if the share of modern households is very small or very high, while net transfers to traditional households are higher in between. At the boundaries, the efficiency aspect by far outweighs the value of gains from redistribution. At low share of modern households, an increase of this share via reducing the net benefit paid to traditional households is associated with a high marginal fiscal surplus. If the share is very high, the value of reducing inequality in society via a higher benefit to traditional families becomes tiny. This would explain a pattern of development in which net transfers to traditional households are low initially, then increase – say by introducing cash for care – and decline again in late stages of development.

As the assumption of a constant reaction term $\frac{\partial |M|}{\partial \theta_T}$ in Proposition 3 may be considered as very strong, we illustrate the consequences of shifting the share of modern households by a simulation of the model in which $\pi \sim U(0,1)$. Figure 1 shows the equilibrium subsidy received by each traditional household as q, the quality of market-provided child care, is varied from zero – at which level all households choose to be traditional – to an upper limit at 0.75 – at which level all households choose to be modern. Beginning at $q = 0$, as q is raised, the per-household subsidy initially increases. As q is further increased to around the level $q = 0.5$, however, per-household subsidies top-out and then begin to fall. Beyond this level of q, the per-household subsidy converges towards zero.

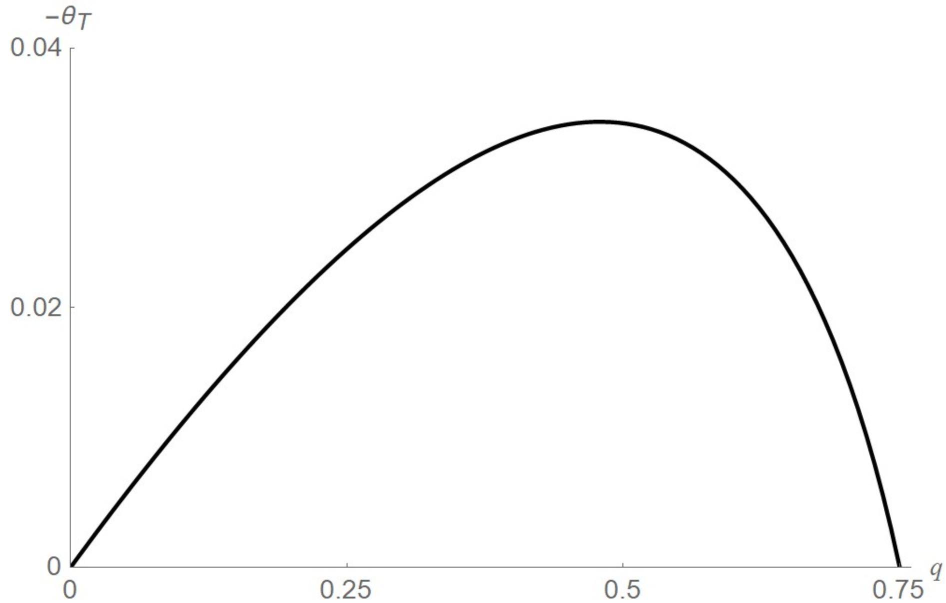

Figure 1: Per-household net subsidy towards traditional families. Figure drawn for $\alpha = \beta = 0.5$; $p = 0.4$; $w_1 = 0.8$; $w_2 = 0.6$; and $R = 0.2$.

Voter participation rights

Let us now consider an environment in which voter participation of traditional voters shrinks, say due to being immigrants with traditional lifestyle without voting rights. With $0 < x < 1$ denoting the voting participation of traditional families, the objective function predicting the outcome becomes

$$\max_{\theta_T} W = \int_0^{\tilde{\pi}} U_M\left(w_1 + w_2 - p - R + \theta_T \frac{1-|M|}{|M|}, q\right) f(\pi) d\pi \qquad (17)$$

$$+x \int_{\tilde{\pi}}^{\infty} U_T(w_1 - R - \theta_T, \pi) f(\pi) d\pi .$$

The first-order condition (assuming separable utility) is

$$\frac{dW}{d\theta_T} = [1-|M|]\left[\frac{\partial U_M}{\partial c_M} - x\frac{\partial U_T}{\partial c_T}\right] - \frac{\theta_T}{|M|}\frac{\partial U_M}{\partial c_M}\frac{\partial |M|}{\partial \theta_T} \qquad (18)$$

$$+\left[U_M\left(w_1 + w_2 - p - R + \theta_T \frac{1-|M|}{|M|}, q\right) - xU_T(w_1 - R - \theta_T, \tilde{\pi})\right] f(\tilde{\pi})\frac{\partial \tilde{\pi}}{\partial \theta_T} = 0.$$

Compared to the baseline scenario, the impacts of reducing the transfer to traditional households look as follows. The cost of less redistribution toward traditional households is smaller, indicated by $[1-|M|]\left[\frac{\partial U_M}{\partial c_M} - x\frac{\partial U_T}{\partial c_T}\right]$ because their lower voting share matters. The value of the fiscal gain to modern households, given by $-\frac{\theta_T}{|M|}\frac{\partial U_M}{\partial c_M}\frac{\partial |M|}{\partial \theta_T}$ is unchanged. Finally, increasing the number of voters at the margin has a positive impact here, as indicated by $\left[U_M\left(w_1 + w_2 - p - R + \theta_T \frac{1-|M|}{|M|}, q\right) - xU_T(w_1 - R - \theta_T, \tilde{\pi})\right] f(\tilde{\pi})\frac{\partial \tilde{\pi}}{\partial \theta_T} > 0$. This effect occurs due to additional voters opposing redistribution toward traditional families. While the marginal utility cost of reducing the share of modern households by increasing the net contribution of traditional households θ_T (or by decreasing the absolute value in case of negative net contribution) is the same as in the baseline scenario, the value of redistribution decreases and political participation changes at the margin.

Proposition 4. *With declining voting rights of traditional voters, redistribution toward traditional voters shrinks. For sufficiently small levels of voting rights redistribution toward traditional families ceases and will be replaced by redistribution toward modern families* $\theta_T^* > 0$.

Proof. See Appendix F. ■

Unsurprisingly, a lower voting share of traditional voters reduces redistribution toward them, as politicians need not care that much about their interests. The proposition shows that redistribution could fall to zero and can even be reversed. This may explain the observations from Norway and Sweden that redistributive measures introduced to support poor traditional voters may be abolished subsequently if the recipients are underrepresented in the vote.

5. Concluding discussion

The analysis delivers several insights on the pattern of redistribution between single- and double-earner families and their evolution over time. Counteracting redistributive subsidies may coexist due to their impact of redistribution within groups. While there is a tendency of supporting poorer groups, redistribution is limited both due to allocative considerations and when voting participation or voting rights differ across groups. At the same time the tax-transfer system typically fails to provide efficient incentives for households to become double earners. It has been shown that during a process of moving the society from mostly traditional to mostly modern households the transfer changes are likely to evolve in a pattern in which transfers to the poorer group are first increasing, but in late stages decreasing. This result contributes to understanding political debates and, more specifically, decisions on cash for care policies in Sweden and Norway.

The model could be extended in various directions. First, integrating the intensive margin of labour supply generates different structure of gains and losses in the tax-benefit system, where more people are affected, though to a lesser extent. Second, taking the notion of leisure more seriously, it may be the case that the marginal utility of material consumption at a given consumption level is lower for single earners due to having leisure and material goods as substitutes, which would change the pattern of voting participation in directions so as to reduce transfers to traditional families. Third, if further marginal costs of public funds are taken into account, e.g., administrative costs of tax filing and applying for subsidies, the amount of redistribution may be smaller than predicted here. Fourth, other determinants of sorting can be considered, like number of children, availability of grandparents, tradition and culture, that could imply smaller labour supply elasticities and hence higher amounts of redistribution. Finally, if prices of market care increase with the level of child care subsidies, such subsidies may be reduced and substituted by other means of supporting modern families.

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Appendix

A. Proof of Lemma 1

If $w_1 > 0$ and $(1-t)(w_1+w_2)-(1-\sigma)p > 0$, both household strategies are feasible as $c_T > 0$ and $c_M > 0$. In that event, $V_T(\cdot) > V_M(\cdot)$ if $\pi \to \infty$ and $V_T(\cdot) < V_M(\cdot)$ if $\pi \to 0$. As moreover V_T is continuous in π, there exists a unique threshold household productivity for each parameter set, $\tilde{\pi}(Y,w,b,\sigma)$. Inserting for consumption in (4) gives

$$\tilde{\pi} = q\left(\frac{(1-t)(w_1+w_2)-(1-\sigma)p}{(1-t)w_1+b}\right)^{\frac{\alpha}{\beta}}. \tag{A1}$$

The claims then follow directly from (A1) where

$$\frac{\partial\tilde{\pi}}{\partial\sigma} = q\frac{\alpha}{\beta}\left(\frac{(1-t)(w_1+w_2)-(1-\sigma)p}{(1-t)w_1+b}\right)^{\frac{\alpha}{\beta}-1}\frac{p}{(1-t)w_1+b} > 0; \tag{A2}$$

$$\frac{\partial\tilde{\pi}}{\partial b} = -q\frac{\alpha}{\beta}\left(\frac{(1-t)w_1+b}{(1-t)(w_1+w_2)-(1-\sigma)p}\right)^{-\frac{\alpha}{\beta}-1} < 0; \tag{A3}$$

$$\frac{\partial\tilde{\pi}}{\partial t} = q\frac{\alpha}{\beta}\left(\frac{(1-t)(w_1+w_2)-(1-\sigma)p}{(1-t)w_1+b}\right)^{\frac{\alpha}{\beta}-1}\frac{c_T(w_1+w_2)-c_M w_1}{c_T^2}; \tag{A4}$$

$$= q\frac{\alpha}{\beta c_T^2}\left(\frac{(1-t)(w_1+w_2)-(1-\sigma)p}{(1-t)w_1+b}\right)^{\frac{\alpha}{\beta}-1}[b(w_1+w_2)+(1-\sigma)pw_1] > 0.$$

B. Proof of Proposition 1

Setting (9) and (10) to zero with fiscal neutrality of adapting subsidies at the margin

$$\int\int\frac{\partial\tilde{\pi}}{\partial b}[tw_2+b-\sigma p]f(\tilde{\pi},w_1,w_2)\mathrm{d}w_1\mathrm{d}w_2 = \int\int\frac{\partial\tilde{\pi}}{\partial\sigma}[tw_2+b-\sigma p]f(\tilde{\pi},w_1,w_2)\mathrm{d}w_1\mathrm{d}w_2 = 0 \tag{A5}$$

yields equality of average marginal utilities

$$\frac{\int\int\int_{\pi<\tilde{\pi}}\frac{\partial V_M}{\partial c_M}(\pi,w_1,w_2)f(\pi,w_1,w_2)\,\mathrm{d}\pi\,\mathrm{d}w_1\mathrm{d}w_2}{|M|} = \lambda = \frac{\int\int\int_{\pi>\tilde{\pi}}\frac{\partial V_T}{\partial c_T}(\pi,w_1,w_2)f(\pi,w_1,w_2)\,\mathrm{d}\pi\,\mathrm{d}w_1\mathrm{d}w_2}{1-|M|}. \tag{A6}$$

Should $\int\int\frac{\partial\tilde{\pi}}{\partial b}[tw_2+b-\sigma p]f(\tilde{\pi},w_1,w_2)\mathrm{d}w_1\mathrm{d}w_2<0<\int\int\frac{\partial\tilde{\pi}}{\partial\sigma}[tw_2+b-\sigma p]f(\tilde{\pi},w_1,w_2)\mathrm{d}w_1\mathrm{d}w_2$ (A7) we obtain

$$\frac{\int\int\int_{\pi<\tilde{\pi}}\frac{\partial V_M}{\partial c_M}(\pi,w_1,w_2)f(\pi,w_1,w_2)\,\mathrm{d}\pi\,\mathrm{d}w_1\mathrm{d}w_2}{|M|}<\lambda<\frac{\int\int\int_{\pi>\tilde{\pi}}\frac{\partial V_T}{\partial c_T}(\pi,w_1,w_2)f(\pi,w_1,w_2)\,\mathrm{d}\pi\,\mathrm{d}w_1\mathrm{d}w_2}{1-|M|} \quad \text{(A8)}$$

Finally, if

$$\int\int\frac{\partial\tilde{\pi}}{\partial b}[tw_2+b-\sigma p]f(\tilde{\pi},w_1,w_2)\mathrm{d}w_1\mathrm{d}w_2>0>\int\int\frac{\partial\tilde{\pi}}{\partial\sigma}[tw_2+b-\sigma p]f(\tilde{\pi},w_1,w_2)\mathrm{d}w_1\mathrm{d}w_2 \quad \text{(A9)}$$

then

$$\frac{\int\int\int_{\pi<\tilde{\pi}}\frac{\partial V_M}{\partial c_M}(\pi,w_1,w_2)f(\pi,w_1,w_2)\,\mathrm{d}\pi\,\mathrm{d}w_1\mathrm{d}w_2}{|M|}>\lambda>\frac{\int\int\int_{\pi>\tilde{\pi}}\frac{\partial V_T}{\partial c_T}(\pi,w_1,w_2)f(\pi,w_1,w_2)\,\mathrm{d}\pi\,\mathrm{d}w_1\mathrm{d}w_2}{1-|M|} \quad \text{(A10)}$$

C. Proof of Lemma 2

Isolating σ and b in the expressions for net contribution gives

$$\sigma=\frac{t(w_1+w_2)}{p}-\frac{R+\theta_M}{p}; \quad \text{(A11)}$$

$$b=tw_1-R-\theta_T. \quad \text{(A12)}$$

Hence, at given net contributions θ_M and θ_T, the variables t,σ,b can be varied as indicated in the claim, inducing the same allocation.

D. Proof of Proposition 2

Note that W is continuous in θ_T, the inequality $w_2>p$ holds by assumption and $\frac{\partial|M|}{\partial\theta_T}>0$. Then $\frac{dW}{d\theta_T}>0$ at $\theta_T\leq-(w_2-p)|M|$ and $\frac{dW}{d\theta_T}<0$ at any $\theta_T\geq 0$ because $\frac{\partial U_M}{\partial c_M}<\frac{\partial U_T}{\partial c_T}$ at $\theta_T=0$. This implies the existence of an optimum θ_T^* satisfying $-(w_2-p)|M|<\theta_T^*<0$.

E. Proof of Proposition 3

Notice that $\theta_T^*\to 0$ if either $|M|\to 0$ or $|M|\to 1$ as $\frac{dW}{d\theta_T}$ is then governed by the term $-\frac{\theta_T}{|M|}\frac{\partial U_M}{\partial c_M}\frac{\partial|M|}{\partial\theta_T}<0$.

Considering $|M|$ at constant $\frac{\partial |M|}{\partial \theta_T}$ yields

$$\frac{\partial^2 W}{\partial \theta_T \partial |M|} = -\left[\frac{\partial U_M}{\partial c_M} - \frac{\partial U_T}{\partial c_T}\right] + \frac{\theta_T^*}{|M|^2}\frac{\partial |M|}{\partial \theta_T}\frac{\partial U_M}{\partial c_M} \tag{A13}$$

$$+\frac{[\theta_T^*]^2}{|M|^3}\frac{\partial |M|}{\partial \theta_T}\left[1 - |M| - \frac{\theta_T^*}{|M|}\frac{\partial |M|}{\partial \theta_T}\right]\frac{\partial^2 U_M}{\partial c_M^2}.$$

Using the first-order condition gives

$$\frac{\partial^2 W}{\partial \theta_T \partial |M|} = \left[\frac{1-|M|}{|M|} - 1\right]\left[\frac{\partial U_M}{\partial c_M} - \frac{\partial U_T}{\partial c_T}\right] + \frac{[\theta_T^*]^2}{|M|^3}\frac{\partial |M|}{\partial \theta_T}\left[1 - |M| - \frac{\theta_T^*}{|M|}\frac{\partial |M|}{\partial \theta_T}\right]\frac{\partial^2 U_M}{\partial c_M^2} \tag{A14}$$

$$= \frac{1-2|M|}{|M|}\left[\frac{\partial U_M}{\partial c_M} - \frac{\partial U_T}{\partial c_T}\right] + \frac{[\theta_T^*]^2}{|M|^3}\frac{\partial |M|}{\partial \theta_T}\left[1 - |M| - \frac{\theta_T^*}{|M|}\frac{\partial |M|}{\partial \theta_T}\right]\frac{\partial^2 U_M}{\partial c_M^2}.$$

Notice that $\frac{[\theta_T^*]^2}{|M|^3}\frac{\partial |M|}{\partial \theta_T}\left[1 - |M| - \frac{\theta_T^*}{|M|}\frac{\partial |M|}{\partial \theta_T}\right]\frac{\partial^2 U_M}{\partial c_M^2} < 0$ and $sgn\left[\frac{1-2|M|}{|M|}\left[\frac{\partial U_M}{\partial c_M} - \frac{\partial U_T}{\partial c_T}\right]\right] = -sgn[1 - 2|M|]$.

Therefore, $\frac{\partial^2 W}{\partial \theta_T \partial |M|} < 0$ at any $|M| \in \left(0, \frac{1}{2}\right]$, implying $\frac{\partial \theta_T^*}{\partial\, |M|} < 0$ in this range. Since $\theta_T^* \to 0$ if either $|M| \to 0$ or $|M| \to 1$, the net benefit $-\theta_T^*$ attains a maximum at some $|\widetilde{M}| \in \left(\frac{1}{2}, 1\right)$.

The direct impact of higher wages of secondary earners on redistribution – at given $|M|$ and $\frac{\partial |M|}{\partial \theta_T}$ is positive, $\frac{\partial \theta_T^*}{\partial w_2} < 0$ since

$$\frac{\partial^2 W}{\partial \theta_T \partial w_2} = \left[1 - |M| - \frac{\theta_T^*}{|M|}\frac{\partial |M|}{\partial \theta_T}\right]\frac{\partial^2 U_M}{\partial c_M^2} < 0. \tag{A15}$$

F. Proof of Proposition 4

The impact of the voting participation of traditional households is given as

$$\frac{\partial^2 W}{\partial \theta_T \partial x} = -[1 - |M|]\frac{\partial U_T}{\partial c_T} - f(\tilde{\pi})\frac{\partial \tilde{\pi}}{\partial \theta_T}U_T(w_1 - R - \theta_T, \tilde{\pi}) < 0. \tag{A16}$$

Thus, $sgn\left[\frac{\partial \theta_T^*}{\partial x}\right] = sgn\left[\frac{\partial^2 W}{\partial \theta_T \partial x}\right] < 0$. If $x \leq \frac{\partial U_M}{\partial c_M} / \frac{\partial U_T}{\partial c_T}$ at $\theta_T = 0$, we obtain $\frac{dW}{d\theta_T}(\theta_T = 0) > 0$, implying $\theta_T^* > 0$.