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Political economy of redistribution between traditional and modern families

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Abstract
We analyse a model in which families may either be 'traditional' single-earner that care for the child at home or be ' modern' double-earner households that use market child care. Family policies may favour one or the other group, like market care subsidies vs. cash-for-care. Policies are determined by probabilistic voting, where distributional impacts matter, both within and across groups. A higher share of modern households—which can be induced by changes in social norms or by changes in gender wage inequality—may have non-monotone effects, with lower net subsidies to traditional households when their share is very low or very high, and higher subsidies in some intermediate stage. This may explain the implementation of cash-for-care policies and their subsequent tightening in late stages of development, when most voters come from modern households, observed in Norway and Sweden.

Keywords Redistribution · Child care · Cash-for-care · Subsidies · Family policy · Probabilistic voting

JEL Classification D13 · H21 · J13 · J18 · J22

1 Introduction

Labour supply decisions of families with children are important drivers of economic growth. While the impact of taxation and subsidies on such decisions is well-understood, the changing political support of transfers between 'modern'

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double-earner households and 'traditional' single-earner households has not received much attention. Our paper attempts to explain the evolution of such policies by considering a political economy framework in which voters choose between fiscal policy platforms comprising taxes and subsidies towards modern and traditional households.

Countries differ in their policies toward taxing and subsidizing families. Moreover, within countries, there is frequently significant evolution over time. When 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. Many countries have introduced subsidies for market child care that favour 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, the beneficiaries of which are single-earner households.

Recent years have witnessed a retreat in support for cash-for-care. In Sweden, cash-for-care—implemented in 2008 with negative impacts on female employment—was abolished in 2016 (Giuliani & Duvander, 2017). In Norway, where cash-for-care was introduced in 1998, it was initially taken up by the vast majority of young families. Over the course of just 15 years, however, demand for cash-for-care has declined sharply with the remaining recipients concentrated among low-income families (Bungum & Kvande, 2013). In 2017, Norway issued a white paper (Ellingsæter et al., 2017) proposing the abolition of cash-for-care, to be replaced by fully subsidized child care for all children between one and six years old. At time of writing, cash-for-care remains in Norway, but plays a much diminished role in the redistributory system. After some attempts in a few states, notably Thuringia (see Gathmann & Sass 2018 for details), Germany introduced cash-for-care at the federal level in 2013. The opportunity to observe the evolution of cash-for-care in Germany was, however, curtailed when, in 2015, it was ruled unlawful by the Federal Constitutional Court (Bundesverfassungsgericht). Individual states were permitted to implement cash-for-care, but—consistent with a retreat in cash-for-care—the vast majority of states declined. As the most prominent exception, Bavaria continued cash-for-care until 2018, before turning it into a subsidy for all parents of infants. Owing to the very short implementation period in Germany, we focus on the experience of countries with longer observed evolutions of cash-for-care. The longest such evolution we are aware of is in Finland, which adopted cash-for-care as early as 1985. Unlike the other countries reviewed here, Finland stands out as a country where cash-for-care has gained widespread acceptance (Ellingsæter, 2012).

The main goal of our analysis lies in determining the outcome of a democratic process on subsidies paid to traditional and modern families. More specifically, we try to explain why net transfers to traditional families are typically positive and why we may observe patterns of first increasing, then decreasing transfers to them, as suggested by the recent experience in Sweden and Norway.

Our approach takes account of the observations of an increase in double-earner households over the last decades being driven by (i) a shrinking gender wage gap and (ii) a shift in social norms, according to which working mothers are more and more socially accepted. Bick et al. (2019) document an average increase in labour force participation of married women of 23 percentage points in seven major OECD countries between 1984 and 2016. Participation rates at the end of that period lie between 70 and 80 per cent. The shrinking gender wage gap over the last decades, as documented by Ponthieux and Meurs (2015), points to a growing share of (potential) secondary earners with access to higher wages. An additional explanation of rising labour force participation is that social norms towards working mothers have become more supportive over time. For instance, Fogli and Veldkamp (2011) report survey evidence of rising support for participation of mothers with preschool children in the US climbing from 8% in 1936 to 58% in 2005. Trends in such attitudes can be sustained through intergenerational cultural transmission, an effect which contributes substantially to explaining attitudes and labour supply of children and their spouses (Fernandez & Fogli, 2009; Farré & Vella, 2013).

We consider a standard probabilistic voting framework in which voting behaviour reflects both material and ideological concerns. With two parties that maximize their votes, we make use of a well-known result, stating that each will formulate an identical political platform—the political equilibrium—which maximizes a Benthamite welfare function (Coughlin & Nitzan, 1981). As a consequence, the unique political equilibrium is Pareto efficient with respect to all voters. This high-level representational result, equating the outcomes of probabilistic voting with those of a Benthamite planner, has received rather more attention than have the more pragmatic questions of what the resulting political equilibrium would actually look like, and whether it is instructive in explaining observed policy dynamics through time. We address both these issues. The nature of Pareto optimal policy is not obvious a priori as it does not solve a static redistribution problem among fixed household groups, but must instead account for the fact that policy choices affect endogenously the choice of household type, which itself affects the size of the cake. We solve for the political equilibrium explicitly and ask whether and when the predicted policy platform is qualitatively consistent with the non-monotone time path of cash-for-care subsidies observed in Norway and Sweden.

In our model, ‘ 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, depending on both economic and cultural factors. The role of culture is captured through a social norm for-or-against labour market participation, while economic factors include the wage rates of the primary and secondary earners, and the stance of fiscal policy. The government can set distinct marginal tax rates for the earnings of modern and traditional families and can also offer members of each household group a lump-sum subsidy. The lump-sum subsidy to modern households is typically in the form of a subsidy for market child care, whereas the subsidy to traditional households is a cash-for-care payment

for not using market child care. When there are marginal households, a policy measure in favour of a given household group will enlarge this group.

Due to the higher marginal utility of consumption of poorer voters, the political equilibrium displays some redistribution towards the poor. The distortionary effects of taxation, coupled with fiscal externalities arising from (privately optimal) switching of household type, in general prevent the realization of full redistribution. Policies that enlarge the cake by reducing disincentives to labour supply by secondary earners lie in the interest of all voters. Thus, the political equilibrium generally displays a compromise, with partial redistribution within and across household groups.

To explore further the predictions of the political equilibrium, we consider the effects of (i) a strengthening social norm in favour of labour force participation by secondary earners; and (ii) a shrinking of the wage differential between primary and secondary earners within the household. Both of these scenarios result in a growing proportion of households choosing to be modern. We do this numerically for a parameterization of the model. Interestingly, we show that both a stronger norm for labour force participation and a shrinking wage differential can generate a non-monotone evolution in the cash-for-care subsidy—being lower when the share of modern families is very small or very large, with higher levels in between. This is not the only possible evolution of cash-for-care subsidies, however, such that the political equilibrium is consistent with different outcomes occurring across countries with different characteristics.

Interpretation of the non-monotone pattern of cash-for-care subsidy levels observed in the model varies across the two scenarios. Under a strengthening social norm for labour force participation, the cash-for-care subsidy initially rises, buoyed by the expansion of the tax base as households switch from traditional to modern. Under a shrinking wage differential, the same effect is present, but is further bolstered by the political equilibrium seeking to offset inter-group inequality between the set of traditional households and the increasingly rich modern households. In the social norm scenario, the subsequent fall in the cash-for-care subsidy at higher levels of development, in which modern households predominate, reflects the unwinding of a negative fiscal externality which, at lower levels of development, inhibited fiscal transfers from traditional to modern households. In the wage differential scenario, it is, in contrast, the result of a diminished scope for intra-group redistribution among a homogeneous rump of households that choose to remain traditional.

A further distinction across scenarios is evident when each is viewed from a holistic fiscal perspective. Whereas the eventual fall in cash-for-care subsidies arising from a growing social norm for labour force participation is uncompensated by other aspects of fiscal policy (such that the net transfer to traditional households falls), the fall in cash-for-care subsidies arising from a shrinking wage differential is more than compensated by declining tax rates on the earnings of traditional households, such that the net transfer to traditional households actually rises. The principal reason for this difference is that, in the shrinking wage differential scenario, traditional households are poorer on average at very high levels of development, such that the political equilibrium redistributes from modern to traditional families. By contrast, in the norm scenario, the small group of traditional households that exists at high levels of development nonetheless has, on average, higher utility. This arises

as these households have a strong norm for home child care, which more than compensates for the implied loss of earnings from remaining traditional. Accordingly, in the norm scenario, at high levels of development the tax rate on the earnings of traditional households does not fall in lockstep with the cash-for-care subsidy. Rather, tax on traditional households remains high with the ensuing revenues used to redistribute from traditional to modern households.

Our contribution is related to different strands of the literature. First, the seminal political economy papers on redistribution (Browning, 1975; Meltzer & Richard, 1981) focus on median voter models. Such models tend to predict comparatively high levels of transfers if the median voter benefits substantially from redistribution, but not if the design of the choice problem allows for coalitions of groups that prefer low levels of government activity (Epple & Romano, 1996a, b). Using instead a probabilistic voting framework, as in Coughlin and Nitzan (1981) and Lindbeck and Weibull (1987), generally reduces the size of these transfers by taking both efficiency aspects and the interests of losers into account explicitly.

Second, we relate to papers dealing with optimal taxation of the family (Boskin & Sheshinski, 1983; Apps & Rees, 1999; Bastani et al., 2020). These studies balance allocative gains against the redistributive motive of the social planner, where the latter may work against subsidising market child care. Accordingly, they advocate low taxation of secondary earners to reduce distortions of labour supply. This message does not hold, however, if wage taxation also implies Pigouvian elements so as to set appropriate incentives for household production, for this may easily imply high taxes on secondary earners (Alesina et al., 2011; Meier & Rainer, 2015). Third, some papers deal with various normative justifications for subsidies that favour modern or traditional households (Apps & Rees, 2004; Blomquist et al., 2010; Domeij & Klein, 2013; Kemnitz & Thum, 2015; Apps & Rees, 2018; Glomm & Meier, 2020). These studies stress that market care subsidies are useful to reduce distortions of labour supply, while cash-for-care may counter the distortions of child care quality choice induced by the design of the market care subsidy. Finally, there are a few political economy contributions that focus on the case for market child care subsidies, on account of (i) its positive impacts on the government budget, or (ii) altruistic preferences (Bergstrom & Blomquist, 1996; Blomquist & Christiansen, 1999; Borck & Wrohlich, 2011).

The contribution closest in spirit to ours is Borck (2014), who uses couple-specific cultural attitudes toward market care to explain differences in voting outcomes towards market care provision. While our model also displays the feature that stronger social norms result in a higher share of modern families, it is novel in analysing subsidies toward traditional households simultaneously with subsidies for market child care, and the possibility of first increasing, later decreasing, subsidies per traditional household.

For simplicity, we focus on labour force participation—the extensive margin of the choice of the secondary earner (see Apps & Rees, 2018, and Glomm & Meier, 2020, for a framework in which also variation in working hours—the intensive margin—matters). Moreover, we fix labour supply of the primary earner at full-time—which makes sense in a cooperative household framework if the primary earner exhibits both a higher wage rate in the market and lower productivity in parental child care. Empirical research has argued repeatedly 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).

The remainder of the paper is organized as follows. Section 2 introduces the model. Section 3 presents numerical results for a parameterization of the model as we allow for (i) a strengthening norm for labour force participation; and (ii) a shrinking wage differential between the primary and secondary earners in a household. Section 4 concludes and indicates directions for further research.

2 Model

Consider a continuum of households with Lebesgue measure one. Each household has a primary earner who supplies labour inelastically full-time ($l_1 = 1$), earning an exogenous wage $w > 0$. A household also contains a secondary earner, who may or may not supply labour, and a child. For simplicity, we focus on extensive labour supply decisions only, as, according to Saez (2002) and Bargain et al. (2014), these are the principal determinants of the elasticity of labour supply. Hence, the household chooses for the secondary earner $l_2 = \{0, 1\}$. If $l_2 = 0$, the secondary earner does not enter the labour force and instead provides child care in the household full-time. If the secondary earner chooses $l_2 = 1$, they earn a wage αw, $\alpha \in (0, 1)$, where the proportionality between primary and secondary earnings within the household may be interpreted as an equilibrium outcome of assortative matching in the formation of households. Unable to provide child care, this is instead purchased in the market at price $p > 0$. If $l_2 = 0$, the household is termed ' traditional' and indexed by T; if $l_2 = 1$, the household is termed 'modern' and indexed by M. The foregoing implies that gross household income, $y \in \{y_T, y_M\}$, satisfies $y_T = w$ and $y_M = [1 + \alpha]w$.

We assume that the governing party has the fiscal tools to, within each household group, raise taxation as a function of household income, and offer lump-sum subsidies. The marginal tax rates faced by each household group are denoted $t \in \{t_T, t_M\}$, where $t_i \in (0, 1)$ for all $i \in \{M, T\}$. Differentiation of the marginal tax rates by household type is most readily interpreted as being achieved through joint taxation. However, even countries that, in general, utilize individual taxation, can target tax breaks towards particular types of household. Often, as in the UK, this is achieved through offering in-work benefits with household-level eligibility criteria. The lump-sum subsidies offered households of each type are similarly denoted $s \in \{s_T, s_M\}$. Although not essential to the formal modelling, to tie with the motivation given in the Introduction, we suppose that the subsidy s_M is framed as a subsidy to offset market child care expenses, such that only modern households benefit. The lump-sum subsidy s_T is framed as a cash-for-care payment, such that only households that forgo market child care—traditional households—are eligible.

As well as allowing households to vary exogenously in the wage, w, of the primary earner, we also distinguish households in regard to their social norm for-or-against providing child care in the home. When, e.g. a traditional household is adhering to a norm for providing child care in the home, this adherence generates utility. When, however, a household with a norm for labour force participation

nonetheless chooses to be traditional, the failure to adhere to its social norm generates disutility. To represent these notions formally, we write household consumption, $c \in \{c_T, c_M\}$, as

$$c_T = [1 - t_T]y_T + s_T + \varphi; \qquad c_M = [1 - t_M]y_M - p + s_M; \tag{1}$$

where, as in, e.g. Besley and Coate (1992), the payoff, φ, relating to norm-adherence enters linearly, as a monetary equivalent, into the payoffs. $\varphi > 0$ for households with a norm for providing child care in the home (which are therefore more likely to prefer to be traditional) and $\varphi < 0$ for households with a norm for labour force participation (which are therefore more likely to prefer to be modern).[1] Locating the payoff to norm-adherence in the consumption of traditional households is without loss of generality; the model can be equivalently reformulated to locate norm-adherence effects in c_M.[2] We refer to the part of consumption c_T that is independent of norm-adherence, i.e. $[1 - t_T]y_T + s_T$, as 'material consumption'.

To capture net redistribution between groups, define the net per-household fiscal transfer, $\theta \in \{\theta_T, \theta_M\}$, as

$$\theta_i = s_i - t_i y_i \qquad i \in \{M, T\},$$

such that $\{c_T, c_M\}$ in (1) can be rewritten as

$$c_T = y_T + \theta_T + \varphi; \qquad c_M = y_M - p + \theta_M. \tag{2}$$

Note that θ_i is positive when the subsidy received by an i-type household exceeds the amount it pays in tax.

Let the preferences of the household be given by the function $U(c)$, where U is strictly concave. A household is traditional if and only if $U(c_T) \geq U(c_M)$ and is modern otherwise. Suppose gross primary income, w, and norm-adherence payoff, φ, are distributed across households according to the joint probability density function $f(w, \varphi)$. Then, we may define the sets

$$\begin{aligned} H_T &= \{(w, \varphi) : U(c_T) \geq U(c_M)\}; \\ H_M &= \{(w, \varphi) : U(c_T) < U(c_M)\}; \\ H &= H_T \cup H_M; \\ H_I &= \{(w, \varphi) : U(c_T) = U(c_M)\}. \end{aligned}$$

The sets H_i, $i \in \{T, M\}$, hold the (w, φ)-pairs consistent with households of type-i. The union of the H_i, H, contains all feasible (w, φ) -pairs. The set H_I is the set of

[1] While it seems reasonable that social norms may be partly driven by varying taxes and subsidies and also by growing shares of modern families, our treatment—in which the evolution of the social norm is exogenous—enables us to isolate the impacts of changing social norms.

[2] An alternative to norm adherence as a perfect substitute to material consumption consists in having it as additional argument in the utility function. For example, with additively separable utility, norm adherence would not affect marginal utility of consumption. Such a formulation would give rise to higher levels of net transfers to traditional households compared to our setting at given shares of modern and traditional households.

marginal households who are indifferent between being traditional or modern. To understand this set, note there is a critical value of household social norm $\tilde{\varphi}$ such that $U(c_T) \geq U(c_M) \Leftrightarrow \varphi \geq \tilde{\varphi}$, given by

$$\tilde{\varphi} = c_M - y_T - \theta_T. \tag{3}$$

The properties of the threshold $\tilde{\varphi}$ in (3) are described in Lemma 1.

Lemma 1 *The threshold $\tilde{\varphi}$ is the unique φ such that households with $\varphi > \tilde{\varphi}$ choose to be traditional ($l_2 = 0$) and households with $\varphi \leq \tilde{\varphi}$ choose to be modern ($l_2 = 1$). The threshold increases in the wage of the secondary earner, αw, in the market child care subsidy s_M, and in the tax rate on the earnings of traditional households, t_T. It decreases in the cash-for-care subsidy s_T, in the price of market child care p, and in the tax rate on the earnings of modern households, t_M.*

The proof of Lemma 1 is elementary and therefore omitted. The lemma can be interpreted as follows. When both the modern and traditional strategies are feasible, the household's social norm for child care is crucial. With a sufficiently low norm, households do better by purchasing market care. Conversely, households with a sufficiently high norm will prefer to provide child care themselves.

The budget constraint of the governing party is affected by three factors. The government levies taxes to raise revenue. Taxation is distortionary, however, generating a cost of $\gamma t_i^2/2$, $\gamma > 0$, per i-type household. Such a distortionary term is used frequently in the literature: as well as well reflecting the deadweight loss of taxation, it may also be interpreted as capturing tax avoidance behaviour and/or administrative costs. The government also has a tax revenue requirement $R \geq 0$, such that tax policy is purely redistributive only when $R = 0$. Finally, the government finances subsidies, s, that imply net fiscal transfers θ. The budget constraint of the government is then

$$\mathbf{E}_H(\theta) + \frac{\gamma}{2}\mathbf{E}_H\left(t^2\right) + R \leq 0, \tag{4}$$

where $\mathbf{E}_H$ denotes an expectation (or average) on the set of all households. In integral notation, (4) equivalently writes as

$$\int\int_{\varphi>\tilde{\varphi}} \left(\theta_T(w) + \gamma\frac{t_T^2}{2}\right) f(w,\varphi)\mathrm{d}\varphi\mathrm{d}w + \int\int_{\varphi\leq\tilde{\varphi}} \left(\theta_M(w) + \gamma\frac{t_M^2}{2}\right) f(w,\varphi)\mathrm{d}\varphi\mathrm{d}w + R \leq 0.$$

As $\frac{\gamma}{2}\mathbf{E}_H\left(t^2\right) + R \geq 0$, the budget constraint in (4) implies $\mathbf{E}_H(\theta) \leq 0$. That is, across all households, the average fiscal transfer cannot be strictly positive.

We consider a vote in which two political parties (A,B) each choose a political platform (s_T, s_M, t_T, t_M). To generate randomness in voting outcomes, we apply probabilistic voting. Specifically, voters have preferences over both a party's

policy platform and over its 'ideological' stance (see, e.g. Persson & Tabellini, 2000, Krasa & Polborn, 2012). Thus, voter i prefers party A to party B if $U(s_T^A, s_M^A, t_T^A, t_M^A) > U(s_T^B, s_M^B, t_T^B, t_M^B) + \phi^i$ where $U(s_T^j, s_M^j, t_T^j, t_M^j)$, $j \in \{A, B\}$, represents the indirect utility of voter i if the political platform of party j is implemented and ϕ^i is a voter-specific ideological bias toward party B (if positive). Crucially, the realization of ϕ^i is unobserved by political parties when policy platforms are determined. All voters are equally responsive to party platforms, and both parties maximize their probability of winning. This framework has a unique equilibrium in which both parties converge to the same platform.

The equilibrium platform maximizes the Benthamite social welfare function (see Coughlin & Nitzan, 1981, Lindbeck & Weibull, 1987, Coughlin, 1992, Banks & Duggan, 2005). This outcome is tantamount to having a Benthamite social planner, where all households within a group are treated in a uniform fashion. The principal advantage of probabilistic voting over the alternative of a median voter setup consists in predicting outcomes that tend to avoid unrealistic jumps by taking the interests of all voters into account. As the formal derivation of this equilibrium representation is not original to our analysis, however, we do not dwell on it here, instead referring the interested reader to Banks and Duggan (2005) for a comprehensive treatment.

The timing of the model is as follows. First, parties determine policy platforms $(s_T^j, s_M^j, t_T^j, t_M^j)$, $j \in \{A, B\}$. Due to rational expectations regarding the distribution of types, as depicted by the density function $f(w, \varphi)$, platforms must satisfy the budget constraint in (4) given optimal sorting of households. In equilibrium, both parties are predicted to pick the same platform. Second, knowing the policy (s_T, s_M, t_T, t_M), households decide on the extensive labour supply of the secondary earner. A political equilibrium is then defined as a policy platform (s_T, s_M, t_T, t_M) that maximizes welfare W subject to the conditions that (i) all households vote according to utility maximization, and (ii) the allocation is feasible, i.e. it satisfies the budget constraint (4).[3]

Denoting the shadow price of public funds by $\lambda > 0$, the unique policy platform is predicted by

$$\max_{s_T, s_M, t_T, t_M} W = \mathbf{E}_H\left(U(c) - \lambda\left[\theta + \frac{\gamma}{2}t^2 + R\right]\right).$$

For $\{i, j\} \in \{M, T\}$, $j \neq i$, the first derivatives are

$$\begin{aligned}\frac{\partial W}{\partial s_i} = &\left\{\mathbf{E}_{H_i}\left(U'\left(c_i\right)\right) - \lambda\right\}\left|H_i\right| \\ &- \lambda \mathbf{E}_{H_I}\left(\theta_i - \theta_j + \gamma\frac{t_i^2 - t_j^2}{2}\right)\left|H_I\right|;\end{aligned} \tag{5}$$

[3] Note that informational requirements are mild in the sense that policy vectors use family type, but never depend on unobservable components of consumption.

$$\frac{\partial W}{\partial t_i} = \mathbf{E}_{H_i}\left(\lambda\left[y_i - \gamma t_i\right] - y_i U'\left(c_i\right)\right)\left|H_i\right| + \lambda \mathbf{E}_{H_I}\left(\left[\theta_i - \theta_j + \gamma\frac{t_i^2 - t_j^2}{2}\right] y_i\right)\left|H_I\right|; \tag{6}$$

where

$$\left|H_i\right| = \int\int_{H_i} f(w,\varphi)\,\mathrm{d}\varphi\mathrm{d}w; \qquad i \in \{M,T\};$$

measures the group size (share) of households of type i (so $\left|H_M\right| + \left|H_T\right| = 1$), and

$$\left|H_I\right| = \int f(w,\tilde{\varphi}(w))\,\mathrm{d}w$$

is the mass of switching households.

The first term in equations (5) and (6) captures the marginal welfare effect of a change in s_i (resp. t_i) for fixed household group sizes. A marginal increase in s_i, for instance, benefits a household of type i by $\mathbf{E}_{H_i}\left(U'\left(c_i\right)\right)$ on average, and leaves the utility of the other household type unchanged. The implied increase in government expenditure, however, reduces utility by an amount λ, the shadow price of public funds, per i-type household. The net of these two average effects, $\mathbf{E}_{H_i}\left(U'\left(c_i\right)\right) - \lambda$, when multiplied by the group size of i-type households, $\left|H_i\right|$, yields the aggregate marginal effect across i-type households, as in (5).

Importantly, however, changes to the policy parameters $\left\{s_i, t_i\right\}$ will, in general, also result in endogenous switching of household type, such that the household group sizes will not remain fixed. The second term in both (5) and (6) captures the fiscal externality associated with this (privately) optimal switching behaviour of households. This term is proportional to the group size of switching households, indicated by $\left|H_I\right|$.[4] When, for instance, a traditional household switches to being a modern household, there are two externalities. First, the state pays out one less net transfer θ_T, and one more net transfer θ_M, with net impact on public funds of $\theta_T - \theta_M$. If $\theta_T > \theta_M$ such switching imparts a positive fiscal externality, and a negative externality otherwise. As $\theta_T - \theta_M = s_T - s_M + \left\{[1+\alpha]t_M - t_T\right\}w$, it can be inferred that, without subsidies ($s_T = s_M = 0$) and with uniform taxation ($t_T = t_M$), $\theta_T - \theta_M$ is positive. The second externality arises from a change in the average tax level in the economy, which regulates the overall distortionary impact of taxation. When a traditional household switches to being a modern household, the distortionary impact of taxation changes by $\gamma\left[t_M^2 - t_T^2\right]/2$. This is a positive fiscal externality if $t_M > t_T$ and negative otherwise.

[4] While the set of indifferent households is always of measure zero, a finite change in net transfers will generally be associated with a positive mass of switching households.

Focusing on interior solutions, in which both household types exist in equilibrium ($0 < |H_i| < 1, i \in \{M, T\}$), equations (5) and (6) are equal to zero. We then have the following result:

Proposition 1 *At an interior political equilibrium* (s_T, s_M, t_T, t_M)*, the following three equalities hold*:

$$\left(\frac{\mathbf{E}_{H_M}\left(U'\left(c_M\right)\right)}{\mathbf{E}_H(U'(c))} - 1\right)|H_M|$$
$$= -\left(\frac{\mathbf{E}_{H_T}\left(U'\left(c_T\right)\right)}{\mathbf{E}_H(U'(c))} - 1\right)|H_T|$$
$$= \mathbf{E}_{H_I}\left(\theta_M - \theta_T + \gamma\frac{t_M^2 - t_T^2}{2}\right)|H_I|;$$
$$\mathrm{cov}_H\left(y, U'(c)\right)$$
$$= \left\{\alpha\mathbf{E}_{H_I}\left(\left[\theta_M - \theta_T + \gamma\frac{t_M^2 - t_T^2}{2}\right]w\right)|H_I| - \gamma\mathbf{E}_H(t)\right\}\mathbf{E}_H\left(U'(c)\right);$$
$$\mathbf{E}_H(\theta) + \frac{\gamma}{2}\mathbf{E}_H\left(t^2\right) + R = 0;$$

and the shadow price of public funds, λ*, is the average marginal utility across households*:

$$\lambda = \mathbf{E}_H\left(U'(c)\right).$$

Proof See Appendix A. □

The first equality in Proposition 1 follows directly from the two first-order conditions for s in (5). In the absence of marginal households, $|H_I| = 0$, or if the switching of marginal households generates no fiscal externality, $\mathbf{E}_{H_I}\left(\theta_M - \theta_T + \gamma\left[t_M^2 - t_T^2\right]/2\right) = 0$, the equality implies straightforwardly that the political equilibrium would eliminate systematic inter-group inequality by ensuring equality of average marginal utility across the two household groups, $\mathbf{E}_{H_M}\left(U'\left(c_M\right)\right) = \mathbf{E}_{H_T}\left(U'\left(c_T\right)\right) = \mathbf{E}_H\left(U'(c)\right)$. In the presence marginal households, whose switching of household type generates fiscal externalities; however, the political equilibrium does not systematically eliminate inter-group inequality. Rather, the following must hold:

Corollary 1 *At an interior political equilibrium with marginal households* $|H_I| > 0$ *and fiscal externalities from household switching,* $\mathbf{E}_{H_I}\left(\theta_M - \theta_T + \gamma\left[t_M^2 - t_T^2\right]/2\right) \neq 0$*, there is a higher-utility group characterised by lower average marginal utility. Enlarging this group by a marginal change in either* s_T *or* s_M *(as appropriate) is associated with a positive fiscal impact from switching households at the margin.*

Proof See Appendix B. □

The message of Corollary 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. But the second consideration, which limits the extent of redistribution, are the fiscal externalities from household switching. When present, these entail that average marginal utilities of consumption will not be equalized.

The second equality in Proposition 1 follows from the two first-order conditions for t in (6). It encapsulates concern for redistribution through the term $\text{cov}_H\big(y, U'(c)\big)$, which measures the correlation between household earnings and consumption. If the effect of fiscal policy was to equalise consumption across all households (i.e. full inter- and intra-group equality) irrespective of earnings, then $\text{cov}_H\big(y, U'(c)\big) = 0$. This would necessarily imply full taxation, $t_T = t_M = 1$. Where taxation non-distortionary ($\gamma = 0$) and where there no fiscal externalities arising from household switching ($\alpha \mathbf{E}_{H_I}\big(\big[\theta_M - \theta_T + \gamma\big[t_M^2 - t_T^2\big]/2\big]w\big)\big|H_I\big| = 0$), the equality shows that $\text{cov}_H\big(y, U'(c)\big) = 0$ would indeed be part of the political equilibrium. When taxation is distortionary and/or there are fiscal externalities, however, the full equalization of expected consumption is not a feature of the political equilibrium.

To the extent that the political equilibrium translates higher earnings into higher expected consumption, diminishing marginal utility implies $\text{cov}_H\big(y, U'(c)\big) < 0$. The more distortionary are taxes (the higher is γ), the lower is $\text{cov}_H\big(y, U'(c)\big)$, signifying less redistribution. As taxes become more distortionary, downward pressure is exerted on tax rates and thereby tax revenues. This ultimately restricts the scale of the government's redistributory efforts. By contrast, the effect of fiscal externalities on $\text{cov}_H\big(y, U'(c)\big)$ can go in either direction depending upon the sign of the externality. Consider a ' global' increase in tax, i.e. a simultaneous marginal increase in both t_T and t_M. The net effect on $\tilde{\varphi}$ is negative, $\partial\tilde{\varphi}/\partial t_T + \partial\tilde{\varphi}/\partial t_M = -\alpha w < 0$, implying that, at the margin, households will switch from modern to traditional. When such switching generates a negative fiscal externality, this imparts downward pressure on levels of taxation, thereby reducing the scope for redistribution, and lowering $\text{cov}_H\big(y, U'(c)\big)$. Conversely, if this household switching from modern to traditional has a positive fiscal externality, then $\text{cov}_H\big(y, U'(c)\big)$ will increase. If the positive fiscal externality more than offsets the negative distortionary effect, then $\text{cov}_H\big(y, U'(c)\big) > 0$ can be part of a political equilibrium.

The third equality in Proposition 1 is merely the binding budget constraint. The final equality states that the shadow price of public funds, λ, is the average marginal utility across households. This has the implication that raising public funds is less costly the higher is average consumption. Accordingly, if average consumption increases, this facilitates higher tax rates and greater scope for redistribution.

3 Simulation

In this section, we explore how redistribution in the political equilibrium changes over the course of development. The characteristic feature of this evolution is an increasing share of modern households over time.

We consider two distinct processes, both of which result in an increasing share of modern households. The first process, in keeping with the evidence given in the Introduction on the sustained rise in female labour market participation, is an evolving social norm for the labour market participation of secondary earners. The second process, consistent with a shrinking gender pay gap, is a declining wage differential between primary and secondary earners. As rises in female labour market participation have occurred at the same time as a shrinking gender wage differential in OECD countries, the two processes we consider need not be mutually exclusive. For example, the narrowing gender pay gap may be driven in part by increasing working hours that mirror the evolution of the social norm. We nonetheless choose to consider each in isolation as their effects are distinct.

We are interested, in particular, in whether either (or both) of the above processes can induce the political equilibrium to display a non-monotone pattern of subsidies to traditional households through time. As discussed in the Introduction, recent experience in countries such as Sweden and Norway points to a pattern of increasing subsidies towards traditional households at lower levels of development, but decreasing subsidies towards traditional households at higher levels of development. Therefore, we investigate this pattern of non-monotonicity specifically.

Consider a simple parameterization of the model, intended to illustrate some main mechanisms, while not aiming at a realistic calibration. Households are of one of three types: high-skill, with primary earnings w_3; middle-skill, with primary earnings w_2; or low-skill, with primary earnings w_1, where $w_3 > w_2 > w_1$. The proportion of households belonging to each skill level is denoted by $g_i, i \in \{1, 2, 3\}$, where $g_1 + g_2 + g_3 = 1$. For tractability, utility is linear-quadratic, $U(c) = \left[b - ac/2\right]c$, where $a > 0$ and $b > [1 + \alpha]aw_3$. The latter restriction is sufficient to ensure that $U'(c) > 0$ for all feasible outcomes of c. The payoff to norm adherence, φ, is uniformly distributed across households according to $\varphi \sim U(\underline{\varphi}, \overline{\varphi})$.[5]

3.1 Evolution of the social norm

In this section, we analyse the effects of a shift in the social norm for labour market participation. To understand whether indeed a shift in the social norm for female labour force participation has occurred in recent decades in the countries discussed in the Introduction that have implemented (or still implement) cash-for-care, we present evidence from the World Values Survey.

Fig. 1 depicts beliefs as to whether pre-school age children suffer when the mother chooses to work, while Fig. 2 depicts beliefs as to whether being a housewife is just as fulfilling as labour force participation. There are country-specific gaps as not all questions were asked in each country in every wave. Both figures provide strong evidence of a shifting social norm: in particular, there has been a strong decline in the belief that labour force participation harms pre-school children. Sweden has some of the largest

[5] If the norm in favour of secondary earner's labour supply displayed some positive correlation with wages, we would arrive at higher net transfers toward traditional families without qualitatively changing the main results.

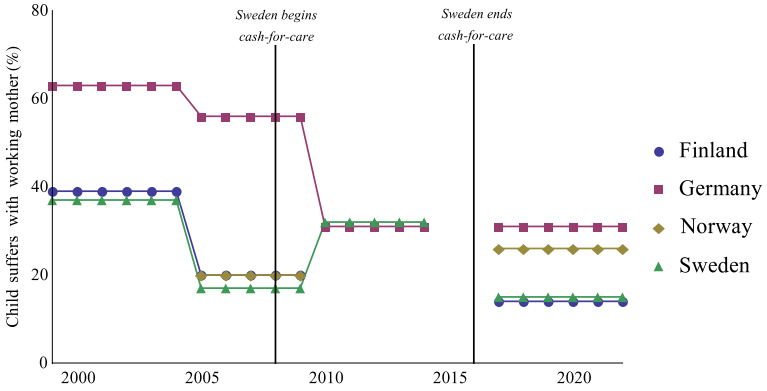

Fig. 1 Percentage of respondents who agree or strongly agree that ' Pre-school child suffers with working mother'. Source: World Values Survey, question D061 (https://www.worldvaluessurvey.org)

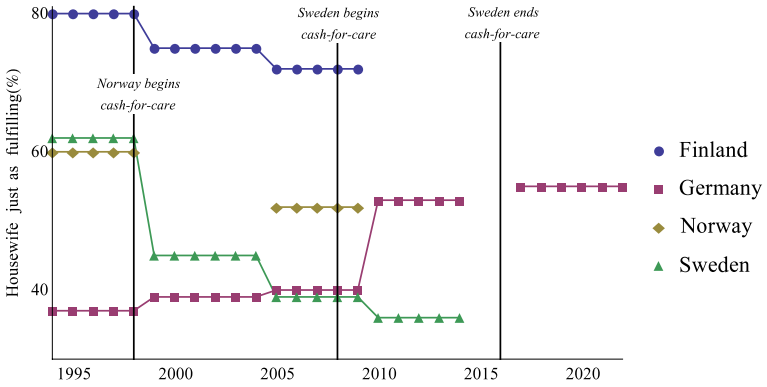

Fig. 2 Percentage of respondents who agree or strongly agree that ' Being a housewife just as fulfilling'. Source: World Values Survey, question D057 (https://www.worldvaluessurvey.org)

shifts in attitude, with only 15% of respondents believing work is harmful to children in 2022, compared to more than 37% of respondents in 1999. Similarly, since around the turn of the century, Sweden has witnessed strong declines in the desirability of being a housewife—from 62% considering it fulfilling in 1998 to just 36% in 2022. Norway exhibits a similar pattern, albeit the declines are rather smaller. Opposition to female labour force participation remains comparatively strong in Finland, however, where cash-for-care appears to have been accepted, and where the desirability of being a housewife lies markedly above that in the other countries.

These patterns in norm shifts are broadly reflected in labour market outcomes. A proxy for the share of households that are modern is the female-to-male labour force participation ratio; a measure we depict over time in Fig. 3.

As seen in Fig. 3, Norway, which showed the clearest evidence of a norm shift, has experienced a strong growth in female labour force participation since

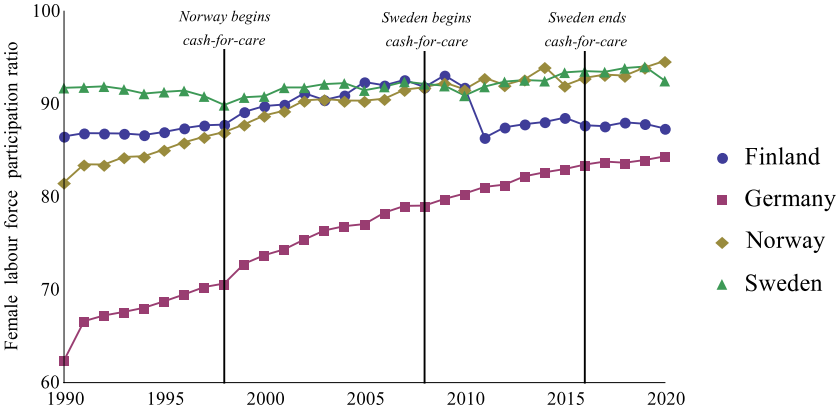

Fig. 3 Female/male labour force participation ratio: 1990–2020. Source: authors' calculations from OECD data (https://stats.oecd.org/index.aspx?queryid=103872)

introducing cash-for-care in 1998. Sweden, which has high baseline female labour force participation (even in comparison with other Scandinavian countries), also shows evidence of a norm shift, but of a lower magnitude. It has experienced a very gradual increase in its female-to-male labour force participation ratio over the decades and, in particular, this ratio increased modestly between 2008 (when Sweden introduced cash-for-care) and 2016 (when it abolished cash-for-care). We shall argue across this section and the next, therefore, that, the evolution of cash-for-care in Sweden is best understood as arising from a combination of shifting norms and (predominantly) a shift in the gender wage gap over time, rather than as a pure social norm effect. Consistent with the lack of clear evidence for a shifting norm in Finland (where cash-for-care appears to have been accepted), for most of the last decade female labour force participation has been below its 1990 level.

To model a shift in social norms towards labour market participation, we consider the effects of progressively lowering φ, thereby increasing the proportion of households who would experience disutility from non-participation in the labour market were they to choose traditional. We vary φ on the range $\varphi \in [-20, 0.08]$. Given the value of other parameters (see below), this range is sufficiently wide that the equilibrium outcome shifts from almost all households being traditional (high φ) to almost all households being modern (low φ). This transition is depicted in panel (a), a key point being that the share of households that are modern is very sensitive to φ for φ close to zero, but becomes much less sensitive to φ as this parameter is moved towards its lower bound of -20. The outcomes of this exercise in respect of lump-sum subsidies (panel b), marginal tax rates (panel c), net fiscal transfers (panel d), and (e) share of households that are modern within each of the three skill levels (denoted $|H_{iM}|, i \in \{1, 2, 3\}$) are shown in Fig. 4. The remaining parameter values used to draw the figure are as follows: $(g_1, g_2, g_3) = (1/3, 1/3, 1/3)$, $(w_1, w_2, w_3) = (0.7, 0.8, 0.9)$, $(\alpha, p, R, \gamma) = (0.35, 0.2, 0, 0.02)$, $(a, b) = \left(0.4, [1 + \alpha]aw_3 + 1 = 1.432\right)$, and $\overline{\varphi} = 0.5$. We shall examine later the effect on our findings of perturbations to these baseline parameter values. Panels (b)-(e) are drawn with share of households that are

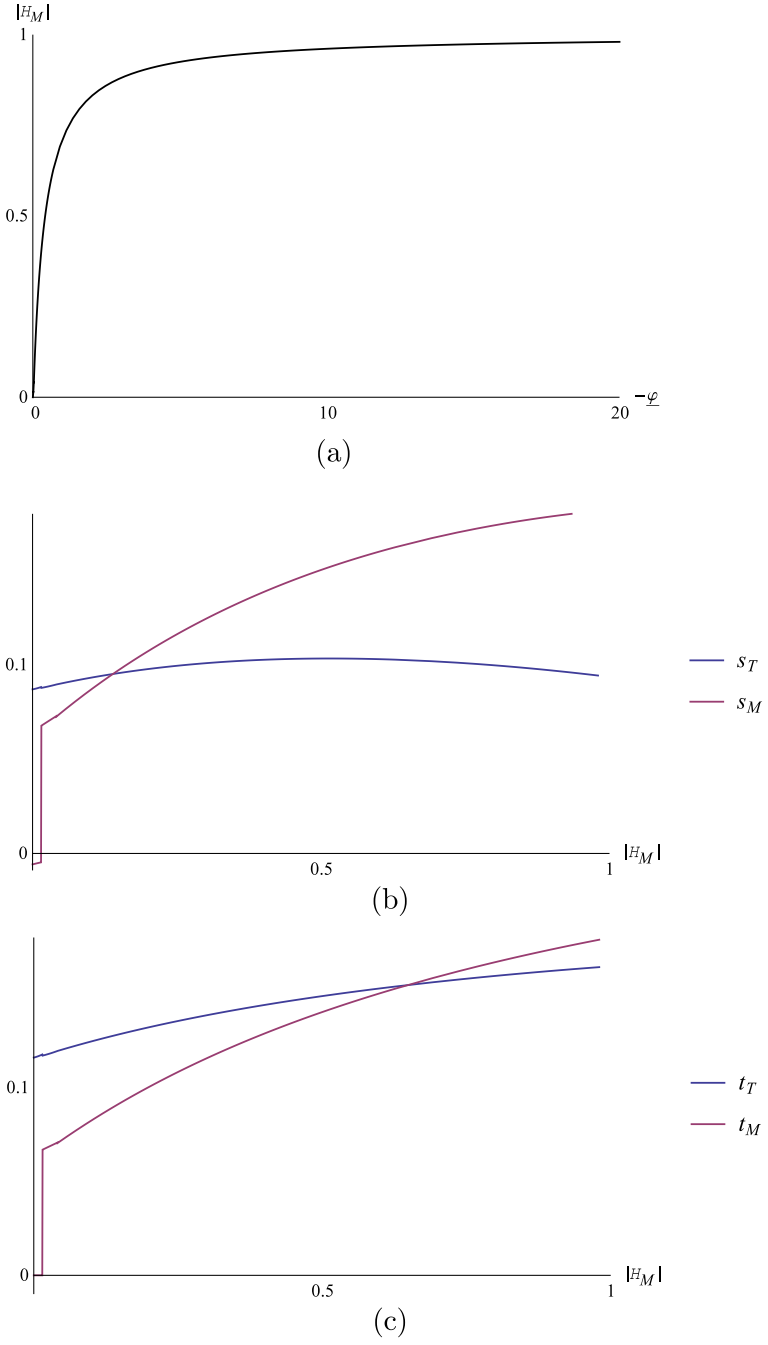

Fig. 4 Political equilibrium with growing norm for labour force participation. (**a**) Share of households that are modern $|H_M|$. (**b**) Subsidies (s_T, s_M). (**c**) Marginal tax rates (t_T, t_M). (**d**) Average net fiscal transfers $(\mathbf{E}_{H_T}(\theta_T), \mathbf{E}_{H_M}(\theta_M))$. (**e**) Share of households that are modern by skill level $(|H_{1M}|, |H_{2M}|, |H_{3M}|)$

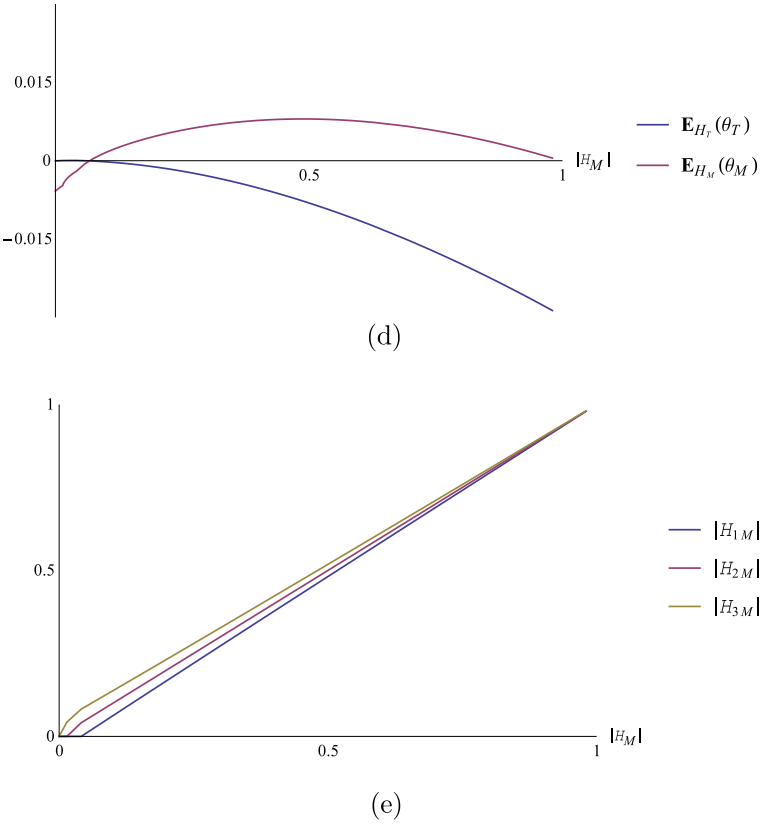

Fig. 4 (continued)

modern, $|H_M|$, on the horizontal axis. Thus, per the discussion above and panel (a), movements in $|H_M|$ along the horizontal axis reflect endogenous shifts in household choices as a result of the underlying exogenous variation of $\underline{\varphi}$.

As φ decreases ($|H_M|$ increases), the political equilibrium undergoes a sequence of transitions. At the very lowest values of $|H_M| > 0$, the political equilibrium is characterised by some high-skill households (those with the lowest φ) choosing to be modern, and all other households choosing to be traditional (panel e). This equilibrium quickly gives way to one in which some medium-skill households also choose to be modern, with only low-skill households all choosing to be traditional. This equilibrium, in turn, itself gives way quickly (at approximately $|H_M| = 0.04$) to a ‘ full-pooling’ equilibrium in which, at all skill levels, some households choose to be modern, and other households choose to be traditional (panel e). This full-pooling equilibrium holds for all $|H_M| > 0.04$. These transitions between equilibria of different types are seen in Fig. 4 are observed as either kinks, or, in some cases, discrete jumps, in the equilibrium values. As, the full-pooling equilibrium aside, the remaining equilibria are transitory in nature, and occur for values of $|H_M|$ that

are too low to characterize OECD economies post-war, we herein focus on the full-pooling equilibrium outcomes.

On the full-pooling outcomes—those above $|H_M| = 0.04$—it is seen in panel (b) of Fig. 4 that the political equilibrium exhibits a non-monotone pattern of subsidies to traditional households, with subsidy s_T at first increasing with the norm for labour force participation, but later decreasing at very high levels of such norm. This confirms that the political equilibrium we study, when acted upon by an evolving norm for labour force participation, is capable of replicating qualitatively the non-monotone pattern of cash-for-care subsidies observed in Norway, where cash-for-care, though not yet abolished, has been allowed to dwindle in economic significance.

To understand this outcome, we note two key features of the underlying parameter-value choices. First, secondary employment always pays in monetary terms. That is, $\alpha w_1 > p$, such that the cost of market care never consumes the full secondary earnings. Accordingly, in the absence of fiscal transfers, a modern household enjoys greater material consumption as compared to a traditional household with identical primary earnings. The second feature is that the highest possible utility across households is achieved for high-skill households with maximum norm adherence payoff $\varphi = \overline{\varphi}$ when choosing traditional. That is, for those households with a strong norm for home child care, the rewards to upholding this norm exceed those from secondary earnings, ceteris paribus. Thus, in equilibrium, although the group of modern households are on average richer in terms of material consumption, when also taking into account consumption from norm-adherence it is the group of traditional households that, on average, enjoy the higher total consumption. As the norm for home child care is weakened, an ever dwindling set of households—those with φ in the neighbourhood of $\overline{\varphi}$—choose to remain traditional and gain (much) utility from adhering to their norm for home child care, while an ever growing set of households choose modern and enjoy greater material consumption.

At low levels of $|H_M|$ above 0.04, modern households are predominantly high-skill, and intra-group inequality is therefore low. By contrast, the group of traditional households is large, and heterogeneous in skill-level, such that intra-group inequality is much higher. The political equilibrium therefore engages more in redistribution among traditional households than among modern households (hence, on the left-side, $t_T > t_M$ in panel c). Although the *average* modern household is a net fiscal contributor ($\mathbf{E}_{H_M}(\theta_M) < 0$ in panel d), the *marginal* household switching to modern carries a negative fiscal externality. As $|H_M|$ is highly sensitive to φ (panel a), the government is obliged to limit the fiscal externality by discouraging switching from traditional to modern. This is achieved by directing subsidies towards traditional households ($s_T > s_M$ in panel b). This results in modern household being, on average, net fiscal contributors, despite also having lower average consumption.

As the norm for home child care is progressively weakened, such that $|H_M|$ enters a mid-range around one-half, three important effects occur. First, the set of modern households becomes more heterogeneous in skill (earnings), while the dwindling set of traditional households become less heterogeneous. The political equilibrium responds to these effects by increasing redistributive efforts among the set of modern households, such that the marginal tax rate on the earnings of modern households, t_M, eventually overtakes t_T, in panel (c). Second, $|H_M|$ becomes progressively

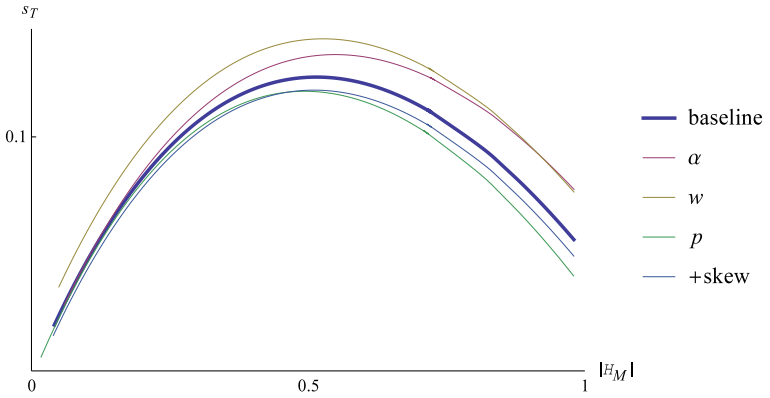

Fig. 5 Effect on cash-for-care subsidies (s_T) of perturbations to the baseline results. The perturbation shown is w (rightward shift in the income distribution); α (decrease in the wage differential); p (increase in cost of market childcare); and +skew (increase in g_1 and offsetting decrease in g_3)

less sensitive to φ (panel a), thereby weakening the fiscal externality associated with switching from traditional to modern. Thus, the political equilibrium is able to redistribute more to the lower-utility group, in this case modern households, such that they switch to being net fiscal recipients (panel d). This is achieved through higher subsidies (the strong growth of s_M in panel b), financed by higher taxes on traditional households. Thus, the tax rate for traditional households does not fall, in spite of the group becoming more homogenous in earnings. Third, the second effect notwithstanding subsidies to traditional households also continue to grow (albeit more slowly). This arises as household switching from traditional to modern expands the tax base, allowing total subsidies to increase even at constant tax rates.

As the norm for home child care becomes so strong that almost all households are modern, further marginal falls in φ have almost no impact on $|H_M|$ (panel a), such that fiscal externalities are essentially zero. This frees the political equilibrium to further redistribute consumption between groups by making traditional households bigger net contributors, on account of their higher average consumption. The absence of switching also implies that the tax base is no longer expanding. As the distortionary effects of taxation increase in the level of taxation, it becomes optimal to achieve inter-group redistribution by cutting the subsidy to traditional households as a partial substitute for raising the subsidy to modern households. Thus, at the highest levels of development, the cash-for-care subsidy begins to fall.

While Fig. 4 demonstrates that the model can predict a non-monotone pattern of cash-for-care subsidies, the preceding discussion implies that the model will not always predict such a pattern. To understand how the parameters of the model move the point of maximum cash-for-care subsidy s_T, in Fig. 5 we show how the effect on the s_T schedule of four perturbations $\{\alpha, p, w, +skew\}$ to the baseline parameter values. The perturbation α (p) is simply a marginal increase in α (p). The perturbation w is a rightward shift in the distribution of primary earnings ($\{w_1, w_2, w_3\}$ are all incremented identically, making all households better off) and the perturbation $+skew$ introduces positive skewness into the distribution of earnings (skill)

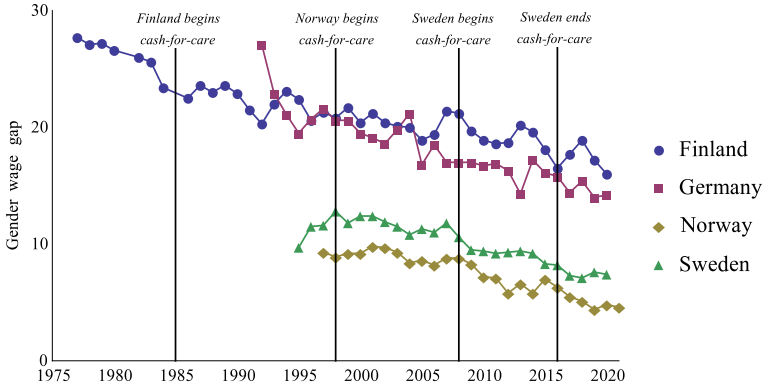

Fig. 6 Gender wage gap (at median earnings). Source: OECD (https://stats.oecd.org/Index.aspx?QueryId=64160)

by raising g_1 (the proportion of households that are low-skill) and simultaneously lowering g_3 (the proportion of households that are high-skill). Two of the perturbations—w and α—raise the s_T schedule relative to the baseline and also, shift the point of maximum cash-for-care subsidies rightward (to a higher level of $|H_M|$). While perturbation w raises the level of the cash-for-care subsidy approximately equally at all levels of $|H_M|$, the impact of increasing α is proportional to $|H_M|$, such that divergence from the baseline results is more pronounced as the share of modern households increases. It follows that a sufficiently large increase in the distribution of primary earnings and/or a sufficiently large decrease in the gender wage differential $1-\alpha$ could shift the point of maximum cash-for-care subsidies sufficiently far to the right that it ceases to lie in the interval $|H_M| \in [0,1]$. In this case, a monotone pattern of cash-for-care subsidies is predicted.

The remaining perturbations, p and $+skew$, both decrease cash-for-care subsidies and shift the point of maximum cash-for-care subsidies leftward. The effects of both perturbations are proportional to $|H_M|$, such that divergence from the baseline results becomes more pronounced as the share of modern households increases. It follows that a non-monotone pattern of cash-for-care subsidies will hold when p is increased above the baseline value and/or positive skewness in the earnings distribution is increased. A monotone pattern can, however, emerge for p sufficiently low, or (albeit unrealistically) if the skill distribution is positively skewed.

3.2 Evolution of the wage differential

We now consider the effect of a shrinking wage differential between primary and secondary earners. Figure 6 illustrates this statistic for Norway and Sweden, as well as Finland and Germany. It displays the gender wage gap (in percentage of male earnings) given full time working hours, evaluated at the respective median of the wage distribution. All four countries are seen to have witnessed a decline in the gender wage gap since the 1990 s. Sweden implemented cash-for care from an already

comparatively low level of gender wage inequality, which then fell further throughout the period in which it enacted cash-for-care. Norway also has a comparatively low level of gender wage inequality, which has fallen further since the introduction of cash-for-care in 1998. By contrast, Finland, where cash-for-care has been more accepted, has much higher levels of gender wage inequality than either Norway or Sweden. Although the gender wage gap has tended to shrink over recent decades, Finland remains much less equal in respect of gender wage inequality than either Norway or Sweden were at the time of initiating cash-for-care. The pattern, therefore, is of cash-for-care coming under pressure in countries with very low gender wage inequality, but less so in countries with higher wage inequality. We shall show that the model can replicate this pattern.

In our model, the percentage household wage differential between primary (i.e. male) and secondary (i.e. female) earners is $1-\alpha>0$. We therefore examine the political equilibrium as α evolves from low (high wage differential) to high (low wage differential). The results of this exercise are depicted in Fig. 7, which uses the same parameters as in Fig. 4, with the exception that $(\varphi,\overline{\varphi})=(-0.21,0.88)$, and $b=2aw_3+1=1.72$. α is varied on the interval $\alpha\in[0.1\overline{87},0.999]$. The five panels (a)-(e) of Fig. 7 are analogous to those of Fig. 4. Again, we present the results with the share of modern households, $|H_M|$, on the horizontal axis. As seen in panel 7a, higher values of α associate endogenously with higher values of $|H_M|$, for α regulates the opportunity cost of choosing traditional in terms of forgone earnings. It transpires that $|H_M|$ is a jump variable with respect to α at some equilibrium transition points. Such jumps occur when all households of one wage group become modern, since losses due to switching households in that wage group then drop to zero. Where $|H_M|$ is discontinuous in α, the discontinuity is 'bridged' by a dashed line.

Similar to the previous analysis, as α increases ($|H_M|$ increases) the political equilibrium transitions in nature. It is seen in panel 7e, at the very lowest values of $|H_M|>0$ the political equilibrium is characterised by some high-skill households (those with the lowest φ) choosing to be modern, and all other households choosing to be traditional. Following a further transition, a full-pooling equilibrium emerges on the interval $|H_M|\in(0.02,0.92)$, before breaking down above $|H_M|=0.92$ in favour of an outcome in which all high-skill households choose to be modern. This equilibrium, in turn, quickly transitions into one in which all high- and medium-skill households choose to be modern, with variation in household type occurring among low-skill households only.

An important difference with respect to the prior analysis of an evolving social norm is that, whereas lowering φ reduces average consumption for fixed households groups, raising α increases average consumption. Accordingly, the marginal cost of public funds falls as α ($|H_M|$) is raised. This allows the government to increase marginal tax rates in a more aggressive fashion in panel 7c, relative to panel 4c. A second difference of note is that, although traditional households are the group with higher average consumption at the left-side of each panel (low α), the situation is reversed at the right-side of each panel (high α). Accordingly, whereas at low α the group of modern households receive a net fiscal transfer, for high α it is traditional households that become the net recipients (panel 7d).

In panel 7a it is seen that, again, the cash-for-care subsidy exhibits the qualitative pattern of non-monotonicity observed in countries such as Sweden and Norway. In

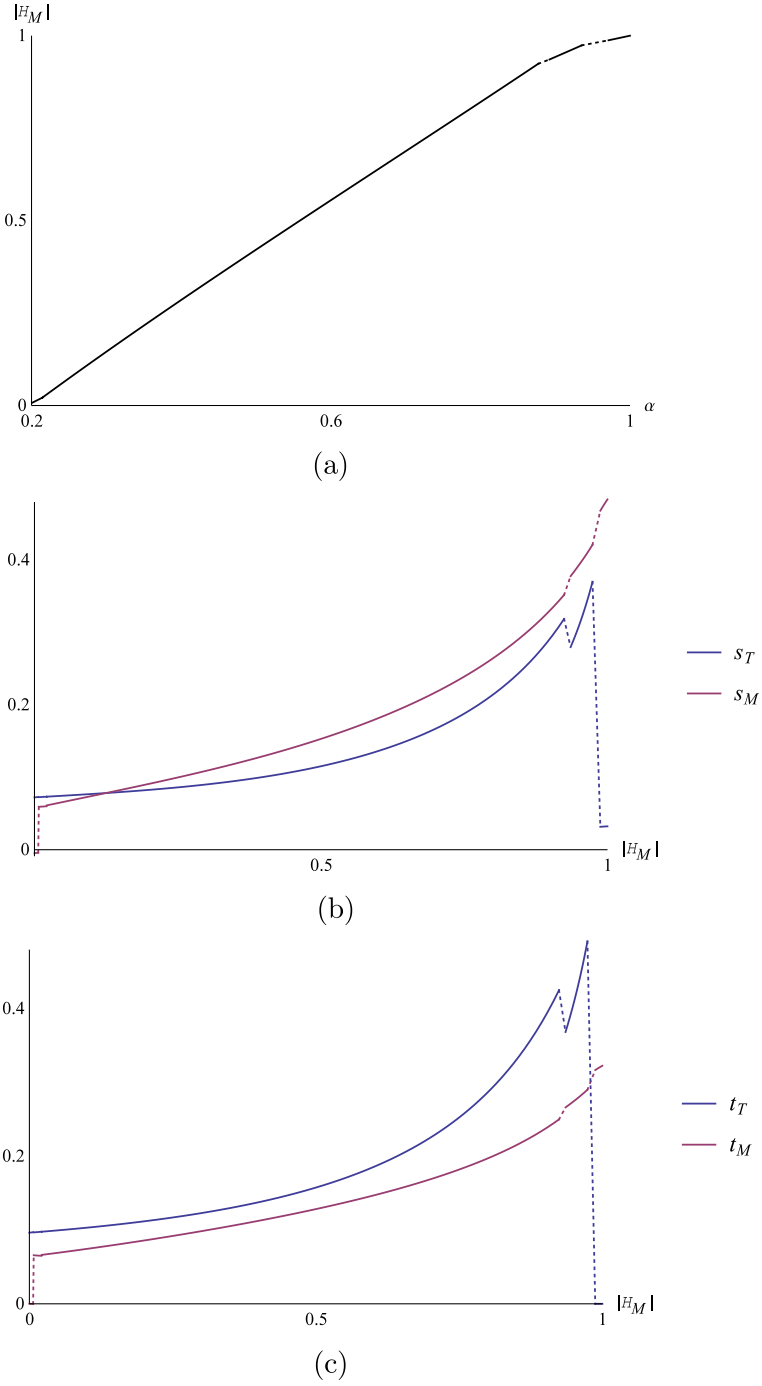

Fig. 7 Political equilibrium with growing secondary earnings. (**a**) Share of households that are modern $|H_M|$. (**b**) Subsidies (s_T, s_M). (**c**) Marginal tax rates (t_T, t_M). (**d**) Average net fiscal transfers $(\mathbf{E}_{H_T}(\theta_T), \mathbf{E}_{H_M}(\theta_M))$. (**e**) Share of households that are modern, by skill level $(|H_{1M}|, |H_{2M}|, |H_{3M}|)$

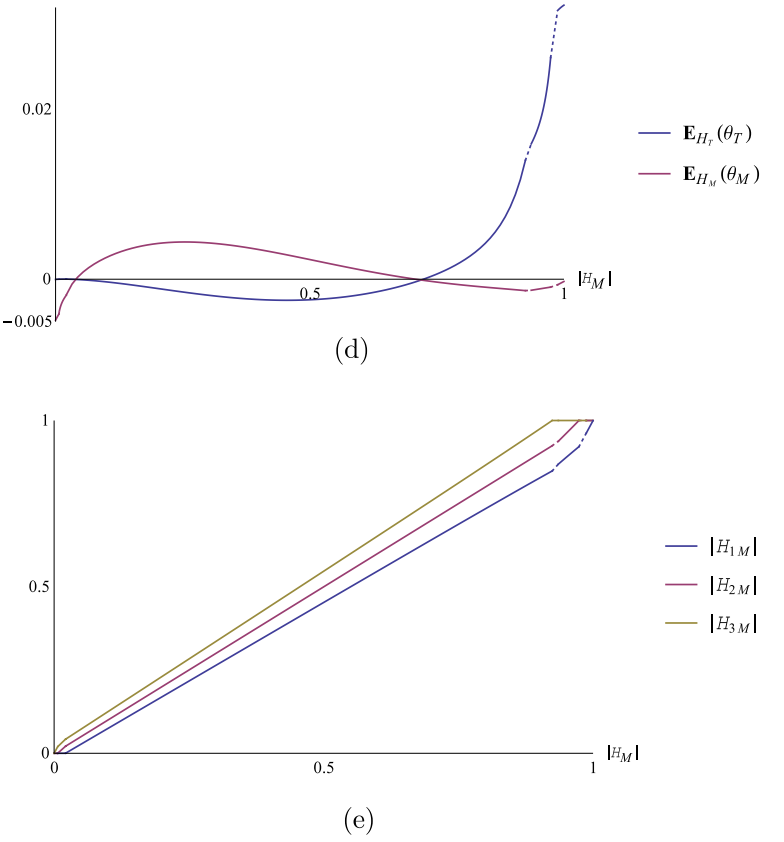

Fig. 7 (continued)

this instance, having risen in a convex fashion with $|H_M|$ over the lower- and middle-levels of development, the cash-for-care subsidy falls in a discrete fashion, coinciding with the first level of $|H_M|$ at which all traditional households are low-skill. In the analysis of the social norm, the fall in the cash-for-care subsidy at very high levels of development was consistent with an overall fall in fiscal transfers to traditional households. This interpretation, however, does not apply in the current context. The discrete fall in the cash-for-care subsidy is coincident with a discrete fall in the marginal tax rate facing traditional households, such that net fiscal transfer to traditional households nonetheless increases (panel 7c). So far as we know, the abolition of cash-for-care in Sweden did not come with strong offsetting fiscal measures towards traditional households, thus suggesting a stronger role for norms in this instance.

At very low α, secondary earnings are insufficient to cover the cost of market child care. Only those families socially committed to labour force participation will ever choose to be modern, therefore. The small group of modern households is homogeneous in earnings (all are high-skill), such that there is no intra-group redistribution ($t_M = 0$). The focus of intra-group redistribution

instead falls entirely on the heterogeneous group of traditional households. As the modern households enjoy, on average, lower consumption, they receive a net fiscal transfer via subsidies for market child care. At intermediate α, growth in the tax base, on account of switching and of earnings growth among extant modern households, pushes up taxes and subsidies for both groups. At high α, it is the set of traditional households that becomes homogeneous in earnings (all are low-skill), thereby eliminating the need for intra-group redistribution. This results in a simultaneous fall in both taxes-paid and subsidies-received by such households. Whereas taxes go to zero ($t_T = 0$), the cash-for-care subsidy, s_T, remains positive as by now traditional households are, on average, at a consumption disadvantage, and are therefore the recipients of inter-group redistribution.

Accordingly, the difference between the two scenarios in terms of net transfers can be explained as follows. If wages of secondary earners increase, the political weight of redistribution toward traditional families rises, suggesting a mostly increasing net transfer toward them. By contrast, the social norm scenario typically balances the interplay of the fiscal gain of inducing households to become modern and the redistributive aspect toward the group with the larger marginal utility of consumption. At the boundaries, the efficiency aspect by far outweighs the value of gains from redistribution. At low share of modern households, an increase in 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.

The analysis must be interpreted carefully. The discrete nature of the fall in the cash-for-care subsidy is a consequence of the finite support of the underlying distribution of φ. Were the support of this distribution to be the whole real line, the fall in the cash-for-care subsidy would still be observed, but would occur in a smooth, rather than discrete, fashion. If the parameter values illustrated in Fig. 7 are perturbed, then perturbations that push up the critical value of α at which the discrete fall in s_T occurs (such that the discrete fall no longer occurs for α in the unit interval) result in s_T being observed to increase monotonically with α. By contrast, non-monotonicity of s_T is preserved by perturbations that push downwards the critical value of α at which the discrete fall in s_T occurs. The effect on the critical value of α is parallel to the prior analysis of Sect. 3.1 in all but one respect. This is that introducing negative skewness in the distribution of earnings (here by raising w_3, holding w_1 and w_2 constant) can perturb the predicted evolution of the cash-for-care subsidy from a non-monotone evolution to a monotone evolution. Accordingly, a non-monotone pattern through time of cash-for-care subsidies appears most likely in countries with low earnings inequality between low- and high-skill households, an attribute which Sweden and Norway both possess among OECD economies (OECD, 2021).

4 Concluding discussion

The analysis delivers several insights into the pattern of redistribution between single- and double-earner families and its evolution over time. Counteracting redistributive subsidies may coexist due to their impact of redistribution within groups. While there is a tendency to support poorer groups, redistribution is limited due to the presence of negative fiscal externalities from household switching. At the same time, the tax-transfer system typically fails to provide fiscally neutral 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, either through shifting social norms towards labour force participation and/or through a declining wage differential, transfers to traditional households may evolve in a pattern in which they are first increasing, but in late stages decreasing. This pattern of transfers is part of a trend towards less fiscal support to traditional households under the norm interpretation, but with a trend towards more fiscal support to traditional households under the wage differential interpretation. 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. As long as labour supply elasticity is still largely governed by the extensive margin, adding hours choices is not expected to change the time pattern of subsidies per traditional family substantially. 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 voting behaviour 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, whereas we consider exogenous changes to the social norm for child care and to the gender wage gap, such changes may be made endogenous to the model, which again would not change the overall picture. Fifth, correlations between the social norm for home child care and the propensity to vote can be explored. This is particularly pertinent where traditional households are concentrated in immigrant communities that are electorally underrepresented. In Norway, for example, employment rates of some immigrant groups remain substantially below average, indicating a higher share of traditional families. As of 2019 (4th quarter), 59.4% of working age adults with an Asian immigration background, for instance, were employed, compared with a population average of 76.3% Statistics Norway (2020). Immigrants might be underrepresented in the vote for various reasons, for example if entitlement to vote is tied to acquiring citizenship. As far as the evolution of society is driven by an increasing share of non-voting traditional households, our framework would obviously predict declining subsidies per traditional household. Last, other determinants of sorting can be

considered, such as the number of children, availability of grandparents, tradition and culture, that could imply smaller labour supply elasticities and hence, higher amounts of redistribution.

Summing up, our approach allows qualitatively different time paths of subsidies to traditional families, depending on the driving force: A social norm evolution towards higher acceptance of working mothers tends to generate an inverse U-shaped pattern, a closing gender wage gap is predicted to be accompanied with increasing subsidies, and a higher share of non-voting immigrants among traditional families is likely associated with declining subsidies. The last channel clearly adds to the likelihood of a U-shaped pattern and may explain why Finland, least affected by immigration of traditional families among the four countries, has not yet witnessed the retreat of cash-for-care.

Appendix

A. proof of proposition 1

Adding together $\partial W/\partial s_T$ and $\partial W/\partial s_M$ from (5) and setting equal to zero yields

$$\mathbf{E}_{H_T}\big(U'(c_T)\big)|H_T| + \mathbf{E}_{H_M}\big(U'(c_M)\big)|H_M| - \lambda = 0, \tag{A.1}$$

so

$$\lambda = \mathbf{E}_{H_T}\big(U'(c_T)\big)|H_T| + \mathbf{E}_{H_M}\big(U'(c_M)\big)|H_M| = \mathbf{E}_H\big(U'(c)\big). \tag{A.2}$$

Substituting (A.2) into (5) gives the first equality in the proposition. To obtain the second, we add up $\partial W/\partial t_T$ and $\partial W/\partial t_M$ from (6), and set equal to zero, to get

$$\begin{aligned}&\lambda\big[\mathbf{E}_H(y) - \gamma\mathbf{E}_H(t)\big] - \mathbf{E}_H\big(yU'(c)\big)\\ &\quad + \alpha\lambda\mathbf{E}_{H_I}\left(\left[\theta_M - \theta_T + \gamma\frac{t_M^2 - t_T^2}{2}\right]w\right)|H_I| = 0.\end{aligned} \tag{A.3}$$

Noting that $\operatorname{cov}(X, Y) = \mathbf{E}(XY) - \mathbf{E}(X)\mathbf{E}(Y)$ and $\lambda = \mathbf{E}_H\big(U'(c)\big)$, (A.3) rewrites as

$$\begin{aligned}&-\operatorname{cov}\big(y, U'(c)\big) + \left\{\alpha\mathbf{E}_{H_I}\left(\left[\theta_M - \theta_T + \gamma\frac{t_M^2 - t_T^2}{2}\right]w\right)|H_I| - \gamma\mathbf{E}_H(t)\right\}\\ &\mathbf{E}_H\big(U'(c)\big) = 0,\end{aligned}$$

which is the second equality in the proposition. The last equality is the binding budget constraint.

B. proof of corollary 1

In an interior political equilibrium,

$$\mathbf{E}_H\left(U'(c)\right) = \mathbf{E}_{H_M}\left(U'\left(c_M\right)\right)\left|H_M\right| + \mathbf{E}_{H_T}\left(U'\left(c_T\right)\right)\left|H_T\right|.$$

Hence,

$$\mathbf{E}_H\left(U'(c)\right) \in \left(\min\left(\mathbf{E}_{H_M}\left(U'\left(c_M\right)\right), \mathbf{E}_{H_T}\left(U'\left(c_T\right)\right)\right), \max\left(\mathbf{E}_{H_M}\left(U'\left(c_M\right)\right), \mathbf{E}_{H_T}\left(U'\left(c_T\right)\right)\right)\right).$$

Therefore, for $\{i,j\} \in \{M,T\}$, $j \neq i$, it holds that

$$\mathbf{E}_{H_i}\left(U'\left(c_i\right)\right) > \mathbf{E}_{H_j}\left(U'\left(c_j\right)\right) \Leftrightarrow \mathbf{E}_{H_i}\left(U'\left(c_i\right)\right) > \mathbf{E}_H\left(U'(c)\right) > \mathbf{E}_{H_j}\left(U'\left(c_j\right)\right).$$

Noting this point, when $\left|H_I\right| > 0$ the first equality in Proposition 1 implies that

$$\mathbf{E}_{H_i}\left(U'\left(c_i\right)\right) \gtrless \mathbf{E}_{H_j}\left(U'\left(c_j\right)\right) \Leftrightarrow \mathbf{E}_{H_I}\left(\theta_j - \theta_i + \gamma\frac{t_j^2 - t_i^2}{2}\right) \lesseqgtr 0. \tag{A.4}$$

Also, owing to diminishing marginal utility of consumption,

$$\mathbf{E}_{H_i}\left(U'\left(c_i\right)\right) \gtrless \mathbf{E}_{H_j}\left(U'\left(c_j\right)\right) \Leftrightarrow \mathbf{E}_{H_i}\left(U\left(c_i\right)\right) \lesseqgtr \mathbf{E}_{H_j}\left(U\left(c_j\right)\right). \tag{A.5}$$

Putting together (A.4) and (A.5), it follows that

$$\mathbf{E}_{H_i}\left(U\left(c_i\right)\right) \gtrless \mathbf{E}_{H_j}\left(U\left(c_j\right)\right) \Leftrightarrow \mathbf{E}_{H_I}\left(\theta_j - \theta_i + \gamma\frac{t_j^2 - t_i^2}{2}\right) \gtrless 0. \tag{A.6}$$

Thus, when, e.g. modern households are the higher-utility group ($i = M$ in equation A.6), the average fiscal externality of switching from traditional to modern, $\mathbf{E}_{H_I}\left(\theta_T - \theta_M + \gamma\left[t_M^2 - t_T^2\right]/2\right)$, is positive.

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Data availability We do not generate any datasets, because our work proceeds within a theoretical and mathematical approach.

Declarations

Conflict of interest Both authors certify that they have no affiliations with, or involvement in, any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

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