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# Enfranchisement and budget deficits: a theoretical note

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## Abstract

If women make different economic decisions than men on average, then an increase in women's influence in the political and economic spheres of society might change economic outcomes. In this note, we focus on the impact of female enfranchisement on fiscal policy outcomes. We present a simple median voter model and show that if women have different economic preferences than men, then female enfranchisement leads to a change in government budget deficits.

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# Enfranchisement and budget deficits: a theoretical note\*

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February 2009

## Abstract

If women make different economic decisions than men on average, then an increase in women's influence in the political and economic spheres of society might change economic outcomes. In this note, we focus on the impact of female enfranchisement on fiscal policy outcomes. We present a simple median voter model and show that if women have different economic preferences than men, then female enfranchisement leads to a change in government budget deficits.

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# 1 Introduction

If women on average make different economic decisions than men - be these for social, cultural or even biological reasons - then an increase in women's influence in the political and economic spheres of society might change economic outcomes. This effect - call it the women effect - has already been shown to be empirically present in the literature on female enfranchisement and the size and composition of government spending (Abrams and Settle, 1999; Aidt et al, 2006; Lott and Kenny, 1999; Stutzer and Kienast, 2005). In this note, we switch attention to the impact of female enfranchisement on government budget balances and take - as a first step - a theoretical approach. Using a median voter model, we show that if women have different economic preferences than men - for example in their rate of time preference or in their degree of prudence toward risk - then female enfranchisement leads to a change in the public savings rate or, equivalently, a different budget deficit.

## 2 The model

When citizens are fully or partially credit constrained, the government budget deficit can be viewed as an indirect means of borrowing on behalf of the citizens. This means that citizens will want to run deficits for the same reasons that a credit-unconstrained citizen would want to borrow to smooth their consumption over time. In turn, these motives depend on individual preferences. We incorporate this view of the government budget deficit in a simple median voter model. To have an effect on economic outcomes of extending the right to vote to women, we have to move away from the standard assumption of a unitary household as the unit of optimization, and assume that men and women optimize their respective utility under their respective constraints separately. Allowing preferences and hence utility to differ systematically across men and women then leads to gender specific differences in the preferred level of the government budget deficit, and in turn, to a different realized budget deficit as women are extended the right to vote.

The basic structure of the model is a two period model of the government budget, in which the first period budget balance is determined by the median voter through an

election. The total population consists of  $n$  citizens, of which half is male and half is female. All citizens have the same fixed per period income which, without loss of generality, can be normalized to zero.<sup>1</sup> Moreover, each citizen receives an equal amount of net government transfers in each of the two periods,  $g_t, t = 1, 2$ , where the net transfer is defined as transfers received from government less taxes paid.<sup>2</sup> The assumption that all citizens receive the same transfer clearly does not reflect reality very well, but is a simplification which underscores our results, and also allows us to abstract from deficits arising due to common pool problems.<sup>3</sup>

Assume for simplicity that citizens are fully credit constrained (a partial credit constraint would do, but a full credit constraint simplifies the model significantly). The citizens derive utility from total consumption, which under the credit constraint and the normalization of private income to zero becomes equal to the net transfer. Thus, citizen  $i$ 's utility is given by the utility function:

$$U^i = u_i(g_1) + \beta_i u_i(g_2), \quad (1)$$

where  $u_i$  is the felicity utility function and  $\beta_i = \frac{1}{1+\rho_i}$  is the time discount factor for citizen  $i$ . Assume further that:

$$u'_i(\cdot) > 0, \quad u''_i(\cdot) < 0, \quad \text{and} \quad \lim_{g \rightarrow -\infty} u'_i(\cdot) = \infty \quad \text{for all } i. \quad (2)$$

To keep to the basic assumptions of the median voter model, assume that citizens differ along one dimension only. In terms of the model, this dimension could for example be

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<sup>1</sup>Allowing income to differ across men and women would complicate the derivations, but would not change the basic conclusions which are only driven by the differences in preferences assumed below. Even if we allow for the combination of progressive income taxation and a lower average income level of women, this would only affect the demand for public goods, but not the desired intertemporal financing profile, and hence, not the deficit. As we abstract from levels of spending and taxes here, we do not pursue this issue further.

<sup>2</sup>This way of expressing net transfers was first proposed by Velasco (1999). Transfers from government can be seen as including both social transfers and public goods, as public and private goods are assumed to be perfect substitutes.

<sup>3</sup>See Krogstrup and Wyplosz (2006) for a similar basic setup in which transfers can differ across groups, leading to common pool problems and a deficit bias.

citizens' time preference,  $\beta_i$ , or the degree to which citizens are prudent and want to save for precautionary reasons,  $u_i'''$ . We make the example of gender differences in time preference here. Assume that the time discount factor derives from one of two distributions, namely that of men and that of women. The  $\beta_{i,h}$  is the subjective discount factor of individual  $i$  in gender group  $h$ , and is given by

$$\beta_{i,h} = \frac{2i}{n} \tilde{\beta}_h, \quad h = m, w \text{ and } i = 1, \dots, \frac{n}{2} \quad (3)$$

where  $\tilde{\beta}_w$  and  $\tilde{\beta}_m$  are the relative weights given to the future by the individual who cares most about the future within each of the two groups. Assume that on average women care more about the future than men:

$$\tilde{\beta}_w > \tilde{\beta}_m \quad (4)$$

Assumption (3) on the distribution of the subjective time discount factors may seem ad hoc, but the particular shape of the distribution is of no consequence for the results, as long as the median woman cares more about the future than the median man.<sup>4</sup> The government's only role in this model is to set net transfers to its citizens by implementing the budget deficit policy announced prior to election (more on the election below). In doing so, it is allowed to borrow or lend at the relevant interest rate as a means of financing potential deficits/surpluses. The government is assumed to fully respect the intertemporal budget constraint, and there is therefore no issue of debt default in the model. Let  $b$  denote the government budget deficit in period one, such that  $b = ng_1$ . The intertemporal budget constraint thus becomes:

$$ng_1 + Rng_2 = 0 \quad (5)$$

where  $R = \frac{1}{1+r}$ . We assume that the economy is small and open, and hence, that the interest rate is fixed at the world level. Maximizing (1) with respect to first and second

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<sup>4</sup>Browning (2000) makes a similar core assumption on gender specific preferences in a model of intra-household savings decisions.

period net transfers, subject to the intertemporal budget constraint (5), yields the two first order conditions which implicitly give the preferred level of net transfers of citizen  $i$ :

$$FOC_1 : \frac{u'(g_1^*)}{u'(-\frac{g_1^*}{R})} = \frac{\beta_i}{R} \quad (6)$$

$$FOC_2 : g_2^* = -\frac{g_1^*}{R}$$

where asterisks denote preferred policies, and  $g_1^*$  hence denotes the preferred net transfer in period one of citizen  $i$ . Note that (6) implies that the optimal transfer depends negatively on the relative weight that the citizen places on future consumption,  $\beta_i$ .

We now turn to the elections. Let two parties, which each derive utility solely from being in office, compete for government at the beginning of period one. The party which wins takes office immediately, at the beginning of period one, and stays in office till the end of period two. The two parties campaign by announcing a fiscal policy to be implemented if they win the election. Since their only objective is to be elected for office, they will both announce the policy which maximizes their respective number of votes. Citizen  $i$  will vote for the party with the announced deficit policy that attains her highest utility level. As is standard in median voter models, both parties end up announcing the preferred policy of the median voter, which hence will be the winning policy.<sup>5</sup> All we have to do to know the implemented fiscal policy is therefore to derive the preferred policy of the median voter.

The identity of the median voter depends on who has the right to vote. Assume first that only men have the right to vote. The time preference parameter of the median man (i.e. the  $\frac{n}{4}$ th man), is

$$\bar{\beta}_m = \frac{1}{2} \tilde{\beta}_m$$

where bars denote values for the median voter. Following from (3) and (6), the median man's preferred budget deficit,  $\bar{b}_{m,1}^*$ , is implicitly defined by:

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<sup>5</sup>For the standard median voter argument, see Hotelling's (1929) spatial voting model, and Metzler and Richard (1981) for an application to explaining the size of government.

$$\frac{u' \left( \frac{\bar{b}_{m,1}^*}{n} \right)}{u' \left( -\frac{1}{R} \frac{\bar{b}_{m,1}^*}{n} \right)} = \frac{1}{2} \frac{\tilde{\beta}_m}{R} \quad (7)$$

Now extend the right to vote to women. Adding the distributions of the two groups horizontally yields a kinked distribution of subjective time discount factors for the entire population:

$$\beta_k = \begin{cases} \theta \tilde{\beta}_m \frac{2}{n} k & \text{for } k \leq \frac{n}{\theta 2} \\ \frac{2\tilde{\beta}_w}{n} k - \tilde{\beta}_w & \text{for } k > \frac{n}{\theta 2} \end{cases} \quad (8)$$

where  $\theta = \frac{\tilde{\beta}_w}{\tilde{\beta}_w + \tilde{\beta}_m} > \frac{1}{2}$ . The time preference parameter of the median voter of the total population (i.e. the  $\frac{n}{2}$ th citizen), now becomes

$$\bar{\beta}_p = \theta \tilde{\beta}_m \quad (9)$$

where the  $p$  subscript denotes values for the median voter of the entire population. The associated preferred budget deficit policy of the median voter when women are included in the electorate is implicitly given by:

$$\frac{u' \left( \frac{\bar{b}_{p,1}^*}{n} \right)}{u' \left( -\frac{1}{R} \frac{\bar{b}_{p,1}^*}{n} \right)} = \theta \frac{\tilde{\beta}_m}{R} \quad (10)$$

Since  $\theta > \frac{1}{2}$  by assumption, this implies that

$$\bar{b}_p^* < \bar{b}_m^*.$$

The median voter has a lower preferred budget deficit when women are included in the electorate under assumption (4).

### 3 Conclusion

Women are gaining increasing political and economic influence in some societies around the world. If women have different economic preferences than men, might this increased



influence lead to changes in economic outcomes? The analysis in this short note implies that the answer - at least theoretically - is yes. Within a relatively simple median voter setup, and simple assumptions regarding differences between male and female preferences, we have shown that adding women to the electorate may change fiscal outcomes. In particular, if women are more prudent toward risk than men, or if women discount time less than men, then female enfranchisement leads to smaller budget deficits, all else equal.

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