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Incentives and the delegation of decision making power in sovereign wealth funds

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Incentives and the Delegation of Decision Making Power in Sovereign Wealth Funds

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Abstract

The paper models the incentives of a politician to delegate the decision making power in a sovereign wealth fund to an independent external manager. It formalizes the learning-effects as well as the increase of transparency of the SWF and the rise of investment possibilities associated with higher transparency. It also focuses on the role of elections as a basic mechanism to control and discipline politicians. I show that the politician has incentives for strategic behaviour if voters have incomplete information about his competence. The paper also studies when the delegation of decision making power is socially optimal and under which circumstances it takes place.

JEL Codes: D7, E6, F3, G2

Keywords: Sovereign Wealth Fund (SWF), Transparency, Policy Delegation, External Management

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1 Introduction

Sovereign wealth funds (SWFs) are not a new phenomenon in the global financial system, even if this term was defined recently (Rozanov 2005). Although the first well-known SWFs were established in early 1950s (Kuwait, Kiribati) and during the 1970s (Abu Dhabi, Singapore), the international debate about the role of the latter was activated only a little while ago. The rise of SWFs in the front of important global structural changes has stimulated concerns about ambitions and investing strategies of SWFs and encouraged the international discussion about the importance and functions of state-owned investors. The global imbalances, the running current account surpluses of emerging countries and the US twin deficits (Bernanke 2007) as well as the financial turmoil of recent years have been supporting varying beliefs and understandings of SWFs.

The change in perception of SWFs and the adjustment of the public opinion about this phenomenon is remarkable. While not so long ago the SWFs were seen as one of the vicious instruments of state-owned capitalism, in times of the financial crisis and global depression they became “white knights” for cash-strapped companies and attractive buyers of last resort (Couturier et al. 2009). Presently, the SWFs are interpreted as symbols of a shift in global power, and this raises again questions about the possible abuse of markets and fears that SWFs will be used for political and strategic goals (Hassan 2009). In the early stages, the most meaningful arguments for justification of this concerns were the lack of transparency and the opaque nature of most funds.

Thus, the fears and doubt were materialised and mutated into protectionist actions against this important class of financial market participants and their investments. For example, there was Nicolas Sarkozy’s “attack” on SWFs in 2007 (Elliott 2007). The European Commission was also worried that

“... SWFs’ investments may be driven by considerations other than **maximisation of return**... More generally, business and investment decisions could be influenced in the **political interest** of the SWFs’ owners. Concerns about SWFs’ operations are inevitably fuelled by the **opaque** way in which some of them operate¹” (European Commission 2008).

There are similar arguments and ideas in the academic literature. Gilson and Milhaupt (2008) argued that SWFs have to give up their shareholder voting rights in order to avoid the influence of their strategic behaviour on the governance of firms they are holding. Two prominent examples or well-known and often discussed cases of the protectionist practice against SWFs’ investments are the Dubai Ports World and

¹Emphases are added.

CFIUS (Committee of Foreign Investment in the United States) controversy² and the failed 2005 bid for Unocal by the government controlled China National Offshore Oil Corporation (CNOOC).

On the one hand, the incidents mentioned above led to the establishment of institutions like International Working Group (IWG) on SWFs and to the attempt to develop some game rules for both SWF hosting (“Santiago Principles”) (IWG 2008) and investments recipient countries (OECD 2008). On the other hand, they motivated thoughts about legitimacy of SWFs and their governance (Monk 2009). Indices developed and used to measure the transparency and governance of SWFs, like Linaburg-Maduell Transparency Index (SWF Institute) or Truman’s scoreboard for SWFs (Truman 2008), include the involvement of external managers as a point that delivers positive scores for a SWF and makes it less opaque. The academic literature stresses the outsourcing of the management of SWFs as a way to signal the commercial nature of their investments (Rozanov 2009). And the practice shows that more and more SWFs allocate some of their funds to external managers or try to join forces with private funds. For example, one of the largest SWFs, the Singaporean SWF Temasek, has set up a new investment company called SeaTown Holdings that would act as an externally managed sovereign fund. By launching this new investment vehicle Temasek tries to insert an additional layer between the SWF and investee companies.

“... SeaTown Holdings, a wholly-owned global investment company, operates and makes its investment decisions independently...” (Temasek 2010).

in order to alleviate concerns about non-commercial investment behaviour and ensure international legitimacy.

Bortolotti et al. (2010) deliver empirical evidence for the “Constrained Foreign Investor Hypothesis” which predicts that

“relatively transparent funds ... will be less constrained in their investment targets and might be able to generate positive long run returns from their investments.” (Bortolotti et al. 2010).

According to Rozanov (2009), the outsourcing of SWFs’ management and thus the compliance of “Santiago Principles” increase the transparency of a particular SWF and eliminate the concerns about strategic behaviour of the fund. In turn, this improves the investment possibilities and results in higher returns. These logical implications seem to give an answer to the important question: Why do politicians give away some decision making power and delegate policy tasks to an independent external manager?

²For more information about the Dubai Ports World controversy see Zunes (2006).

I use a simple model as a tool to describe the incentives which underlie the politician's decision to delegate the management of the sovereign wealth fund to an independent external manager. The basis of the theoretical framework forms a simple cost-benefit analysis of the delegation from the office-holding politician's perspective. I formalise the motives of delegation: learning-effects (Arrow 1962) as well as the increase of transparency of the SWF and the rise of investment possibilities associated with higher transparency. The latter represents the innovative building block of the model. The "Constrained Foreign Investor Hypothesis" mentioned by Bortolotti et al. (2010) reflects a similar idea but in the context of SWF's investment patterns. Additionally, I build in two disciplining mechanisms with regard to the politician and to the external manager: elections and pecuniary self-interest motives of the external manager. The model developed in this paper builds on the theory of elections as a disciplining mechanism and on the analysis of policy task delegation. The role of elections as a mechanism which controls the officeholder and helps to achieve accountability of elected politicians to the citizens is analysed in theoretical works by Barro (1973), Ferejohn (1986) as well as by Persson, Roland and Tabellini (1997). In models following the Barro-Ferejohn tradition politicians are identical and thus voters are ex post indifferent about which candidate they vote for. In this case the reelection motive controls moral hazard on the side of the incumbent inducing him to act on behalf of voters' interests. I use the extension of this framework with heterogeneous politicians introduced by Maskin and Tirole (2004) which allows analysing adverse selection through election mechanism. In this regard, the model in this paper is also closely related to that developed by Berganza (2000).

The modeling of policy tasks delegation combines components used by Eggertson and Le Borgne (2007) and Alesina and Tabellini (2007). The delegation decision made by politician trades-off the costs of having an incompetent manager which cannot be dismissed against the benefits from transparency, learning effects and pecuniary self-interest motives of the external manager. The function of pecuniary self-interest motives of the external manager is similar to the career concerns provided by Holmström (1999). This important mechanism delivering incentives for politicians and civil servants has been analysed also by Tirole (1994).

Thus, the theoretical framework I adopt combines well elaborated components as well as innovative building blocks that allows an suitable and useful application of the policy task delegation theory to the highly discussed sovereign wealth funds. The intention of the paper is to stimulate the interest in the management outsourcing issues in SWFs and to deliver some formal arguments and explanatory statements that will facilitate the further academic debate and provide policy decision takers with helpful background.

I find that the increase of SWF’s average productivity as a consequence of management outsourcing and higher transparency improves social welfare. However, the influence of fund’s increased productivity on the politician’s delegation motivation is strongly linked to the competence level of the officeholder and to the character of the SWF: The positive effect is strongest if there is a SWF providing public goods (for example, an infrastructure fund). Another finding is that if the delegation occurs, it is socially optimal if the ego-rent of holding the office is small enough. Higher private benefits from a political office deliver incentives for the incompetent politician to delegate the policy task in order to get a reelection chance even if the expected output from the external managerial regime is small. However, the reverse is not true, i.e. under certain circumstances the management of SWF won’t be delegated even if the delegation improves social welfare.

The paper is structured as follows: Section 2 presents the model. Section 3 describes the politician as a manager of SWF and the output generated under this regime. Section 4 characterises the output of a SWF produced with an external manager. Section 5 compares the welfare results of both regimes and section 6 derives the conditions under which delegation takes place. Section 7 concludes. Appendix contains technical details.

2 The model framework

Consider a simple economy where total output is defined as the result of the sovereign wealth fund run by an individual “managing” this fund. There are two periods, 1 and 2, and the output y_1 of the period 1 is given as follows (based on Persson, Roland and Tabellini 1997):

$$y_1 = \theta_1 (e - r_1) \tag{1}$$

The parameter θ_t is a random variable, describing the “competence level” or ability of an “officeholder” to manage the SWF well in each period. I assume that θ_t is uniformly distributed³ on the interval $[1 - \frac{1}{2\delta}, 1 + \frac{1}{2\delta}]$ with expected value of 1. Each elected candidate observes his own ability but nobody else does. The officeholder has a possibility to extract personal rents r_t by investing in “pet” projects⁴. Since investing in political “pet” projects is not based on output maximization of the SWF, extracting personal rents is a strategy that diverts the resources of SWF. The levels of rents extracted in each period are publicly unobservable so that, if SWF performs badly, the

³I assume that the competence-level of the same person remains constant over time, but I use the index t for θ to emphasize that there is a possibility of another “officeholder” in the second period.

⁴This can be done, for example, through investing in some industries due to personal interests of officeholder.

voters are not able to find out if it is due to the bad competence of the SWF manager or to his resource-diverting behaviour. I make an additional assumption about the maximum possible level of rents to be extracted⁵: $r_{\max} = \bar{r} < e$. The parameter e characterizes the output level of an average SWF, i.e. a SWF run by the officeholder with average competence level of $\theta_t = 1$ who is not diverting any resources.

If the first-period officeholder is reelected and manages the SWF also in the second period, it is assumed that there are learning-by-doing effects (Eggertsson and Le Borgne 2007), so that the output in the second period increases:

$$y_2 = \theta_2 (e - r_2) + \lambda \quad (2)$$

where the parameter $\lambda > 0$ is interpreted as the increase of the level of output due to the experience of the politician who manages the SWF.

In case of a new officeholder output y_2 of the period 2 is given by:

$$y_2 = \theta_2 (e - r_2) \quad (3)$$

The representative voter is interested in maximizing his expected utility that is defined as a share of output of SWF consumed:

$$u_t(y_t) = \xi y_t \quad (4)$$

where $0 < \xi \leq 1$ gives the share of output that is consumed by each individual member of the economy⁶.

The utility of a politician over two periods is given by the share of output he consumes as “regular” member of the society, by personal rents extracted from office and by one-time ego-rent R received if he is reelected⁷:

$$v = \xi y_1 + r_1 + \Pi (R + r_2) + \xi y_2 \quad (5)$$

where $\Pi = 1$ if politician is reelected for second period and 0 otherwise.

Both the politician and voters are risk neutral so that risk sharing problems do not arise.

⁵This assumption is not as strict as it seems to be. The expression for $y_t = \theta_t (e - r_t)$ together with $y_t \geq 0$ implies that $r_t \leq e$ a condition which Persson, Roland and Tabellini (1997) call a resource constraint limiting the maximum amount that can be diverted by the executive. I just make an additional assumption that $r_t \neq e$ which in turn implies that $y_t = 0$ appears if and only if $\theta_t = 0$.

⁶If $\xi = 1$ then it is a SWF producing a public good (for example, an infrastructure fund or a fund with main objective to enhance a technology level of whole country). If ξ is small enough (like $\xi = \frac{1}{n}$ with n the number of members of society) then the SWF is something like a pension fund.

⁷For simplicity I assume that the discount factor equals one.

3 Politician as a manager of SWF

Once the politician decides to manage a SWF by himself, the only relevant choice variable for each period, given his competence level that he observes, is r_t . The timing of model is as follows: At the beginning of period 1, voters build some beliefs about the “desirable” level of output \tilde{y} for the end of a period (determined below) and communicate this to the politician. In the real world the politicians never receive an unambiguous message from voters and thus never know exactly the required level of diligence. However, in this model framework I assume that the politician knows the voters’ voting rule, allowing thereby the communication of \tilde{y} to the politician. The officeholder picks his first period level of personal rents r_1 which in combination with his competence gives a first period output of SWF y_1 . The elections are held at the end of the first period. If the SWF managed by the politician produces at least the reference level of output, the politician is identified as a competent one and is reelected for the second period. Otherwise voters randomly select a new politician from a pool of candidates with random θ . So the challengers are available to be elected but play no active role in order to compete against each other or against the incumbent. Once reelected, the politician obtains the ego-rent R and the possibility to choose r_2 and to produce the output y_2 .

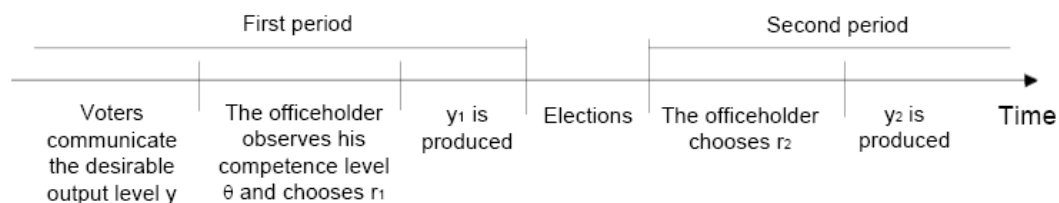


Figure 1: The timing of the model

3.1 Politician’s decision

The decision for the **second period** is trivial. Each politician, independently of being an incumbent or a new one⁸, maximizes his second period utility without reelection

⁸The only difference between the incumbent and a new politician is their output level generated in the period two (equations (8) and (9)). However, the results of the optimisation calculus are the same for both.

concerns⁹:

$$r_2 = \arg \max \{r_2 + \xi\theta(e - r_2)\} \quad (6)$$

The first order condition implies that

$$r_2^* = \begin{cases} \bar{r} & \text{if } \theta \leq \frac{1}{\xi} \\ 0 & \text{if } \theta > \frac{1}{\xi} \end{cases} \quad (7)$$

This condition shows that if the politician is “competent” enough, he does not have any reasons to divert resources. The fund managed by him produces an output high enough, so that the share of this output consumed is higher than the possible amount of diverted resources. So the output produced in the second period is:

$$y_2^* = \begin{cases} \theta(e - \bar{r}) & \text{if } \theta \leq \frac{1}{\xi} \\ \theta e & \text{if } \theta > \frac{1}{\xi} \end{cases} \quad \text{in case of a new officeholder} \quad (8)$$

and

$$y_2^* = \begin{cases} \theta(e - \bar{r}) + \lambda & \text{if } \theta \leq \frac{1}{\xi} \\ \theta e + \lambda & \text{if } \theta > \frac{1}{\xi} \end{cases} \quad \text{in case of the same officeholder} \quad (9)$$

As one can see, in both cases voters are interested in the competence level of the officeholder and therefore try to elect the candidate with higher θ .

Things become less trivial when the decision for the first period is made. The incumbent observes his own competence level θ and knows the required level of output \tilde{y} . If the politician realises that his θ is small and he cannot produce \tilde{y} even if he is not diverting any resources¹⁰ (i.e. $\theta e < \tilde{y}$), he will have an incentive to divert the maximum possible amount of resources (but only if $\theta \leq \frac{1}{\xi}$, otherwise the opportunity costs of diverting are too high, and he will try to produce the maximum possible output given his competence level without diverting). In the case that the incumbent decides to produce \tilde{y} , he has to choose

$$\tilde{r}_1 = e - \frac{\tilde{y}}{\theta} \quad (10)$$

The incumbent selects \tilde{r}_1 if and only if his expected utility from this action is not smaller than the expected utility from any alternative level of \hat{r}_1 :

$$\xi\tilde{y} + \tilde{r}_1 + R + r_2^* + \xi y_2(r_2^*) \geq \xi y_1(\hat{r}_1) + \hat{r}_1 + E\{\xi y_2(r_2^*)\} \quad (11)$$

where the last term on the right-hand side of the inequality is the expected value of the output consumed, given that the incumbent is not reelected and the decision is made

⁹The period 2 is the last period and there are no further elections.

¹⁰One can think about negative rents in this case and try to interpret this as some additional “effort” of the officeholder, but I restrict $r_t \geq 0$

by a new politician.

There are two possible cases:

1. **Incumbent with $\theta \leq \frac{1}{\xi}$** (low competence)

In this case, the condition (11) turns into:

$$\xi\tilde{y} + e - \frac{\tilde{y}}{\theta} + R + \bar{r} + \xi\theta(e - \bar{r}) + \xi\lambda \geq \xi\theta(e - \bar{r}) + \bar{r} + \xi \cdot 1 \cdot (e - \bar{r}) \quad (12)$$

where the randomly elected new politician is expected to be of average competence level 1, hence his optimal choice of $r_2^* = \bar{r}$ (because $1 \leq \frac{1}{\xi}$).

Thus, the incumbent selects \tilde{r}_1 if the following condition holds:

$$\theta \geq \theta^* \equiv \frac{\tilde{y}}{\xi\tilde{y} + \xi\bar{r} + e(1 - \xi) + R + \xi\lambda} \quad (13)$$

One can see that higher benefits from holding the office (i.e. e , R , λ and \bar{r}) lead even less competent politicians to choose \tilde{r}_1 and to generate the required level of output. Nevertheless, higher required levels of output \tilde{y} can be produced with more competent politicians and this implies a higher θ^* .

2. **Incumbent with $\theta > \frac{1}{\xi}$** (high competence)

In this case, the condition (11) shrinks to:

$$\xi\tilde{y} + e - \frac{\tilde{y}}{\theta} + R + \xi\theta e + \xi\lambda \geq \xi\theta e + \xi(e - \bar{r}) \quad (14)$$

or

$$\frac{\tilde{y}}{\theta} \leq \xi\tilde{y} + R + \xi\lambda + e(1 - \xi) + \xi\bar{r} \quad (15)$$

But because $\theta > \frac{1}{\xi}$

$$\frac{\tilde{y}}{\theta} < \xi\tilde{y} \leq \xi\tilde{y} + R + \xi\lambda + e(1 - \xi) + \xi\bar{r} \quad (16)$$

the condition always holds. In other words, the incumbent definitely tends to select \tilde{r}_1 and produces \tilde{y} . But due to his “high” competence, he actually selects $r_1 = 0$, produces higher output, is reelected and benefits from higher output.

To summarise again, “good” incumbents (with $\theta > \frac{1}{\xi}$) are never diverting and are always reelected. “Bad” incumbents are never reelected and therefore divert in the first period the maximum possible amount of resources. There are also some other competence levelled politicians (they may be higher-than-average), who have incentives to divert resources but are still reelected despite this.

3.2 Voters' decision rule

Now the decision rationales of voters are formalised. I assume that the voters' decision rule is *myopic*, i. e. they decide to reelect the incumbent if he generates higher expected output in the second period relative to a new politician who can be randomly elected as an alternative (Berganza 2000). Therefore, voters set their required level of output for the first period \tilde{y} so that $\theta^* = 1$. The decision problem of voters shrinks to:

$$\theta^* = \frac{\tilde{y}}{\xi\tilde{y} + \xi\bar{r} + e(1 - \xi) + R + \xi\lambda} = 1 \quad (17)$$

This implies:

$$\tilde{y} = e + \frac{R + \xi\lambda + \xi\bar{r}}{1 - \xi} \quad (18)$$

This level of \tilde{y} together with equation (10) leads to:

$$\tilde{r}_1 = e \left(1 - \frac{1}{\theta} \right) - \frac{R + \xi\lambda + \xi\bar{r}}{1 - \xi} \cdot \frac{1}{\theta} \quad (19)$$

The voters' decision rule together with an appropriate communication of the level of output desired for the first period makes it possible to select a politician for the second period that has a higher-than-average competence level. The incumbent is also disciplined by the voters due to the fact that he faces an intertemporal trade-off: if he diverts too much today, he will be removed from office and will not have a possibility to extract rents tomorrow.

4 External manager in the SWF

Now the output of the SWF is analysed when it is managed by an external manager who does not face any elections and once hired, holds the office for both periods. The engagement of an external manager increases the transparency of the SWF in the eyes of the rest of the world and probably eliminates the concerns about strategic behaviour of the fund¹¹. This has a positive impact on the investment possibilities and portfolio diversification options of a particular SWF, because it eliminates the protectionist resistance from the rest of the world (Rozanov 2009). This effect is modeled by describing the output of SWF run by a professional external manager just

¹¹For the transparency issues in general compare Linaburg-Maduell Transparency Index (SWF Institute) or Truman's scoreboard for SWFs (Truman 2008), specially the governance as well as transparency and accountability components. Both measures include the involving of external managers as a point that delivers positive scores for a SWF.

as:

$$y_1 = \theta^m (e^m - r_1) \quad (20)$$

$$y_2 = \theta^m (e^m - r_2) + \lambda \quad (21)$$

where the parameter θ^m without time index is the competence of the external manager with “long-term” contract to run the SWF. The parameter $e^m \geq e$ captures the positive effect of increasing average output due to improved transparency of the SWF managed by an external manager¹². It is assumed that the manager is able to extract personal rents as well. The utility of a manager over two periods is given on the one hand by the share of output he consumes as “regular” member of the society and by rents extracted at the office. On the other hand, I assume that the manager has some “pecuniary self-interest” motives, i.e. his wage at the end of each period is dependent on the output produced in this period. The core idea in this case is that the manager has an additional incentive to signal his “high” ability and/or his “diligence” through higher output levels for both periods in order to get a higher wage. So the manager’s utility is given as follows:

$$\omega = \xi y_1 + r_1 + \xi y_2 + r_2 + \beta (y_1 + y_2) \quad (22)$$

where the performance-related bonus of the manager linearly depends on the levels of output produced during both periods according to the coefficient $0 \leq \beta \leq 1$.

Given that the manager knows his own competence level θ^m , the only choice variable are the levels of personal rents to be extracted in each period r_t . The first order conditions imply that:

$$r_t^* = \begin{cases} \bar{r} & \text{if } \theta^m \leq \frac{1}{\xi+\beta} \\ 0 & \text{if } \theta^m > \frac{1}{\xi+\beta} \end{cases} \text{ for } t = 1; 2 \quad (23)$$

As a consequence of pecuniary self-interest the manager tends to be more diligent or more careful in diverting resources than the politician¹³. So the output levels produced under external management in each period are:

$$y_1^* = \begin{cases} \theta^m (e^m - \bar{r}) & \text{if } \theta^m \leq \frac{1}{\xi+\beta} \\ \theta^m e^m & \text{if } \theta^m > \frac{1}{\xi+\beta} \end{cases} \quad (24)$$

¹²At this point one can think not only about involvement of an external manager but also about transparency improving events in general, for example the compliance of “Santiago Principles”. This increases the average return on investment in the same manner as described in model.

¹³ $\beta > 0$ implies $\frac{1}{\xi+\beta} < \frac{1}{\xi}$.

and

$$y_2^* = \begin{cases} \theta^m (e^m - \bar{r}) + \lambda & \text{if } \theta^m \leq \frac{1}{\xi + \beta} \\ \theta^m e^m + \lambda & \text{if } \theta^m > \frac{1}{\xi + \beta} \end{cases} \quad (25)$$

5 Politician vs. external manager

In this section the expected output levels generated in the SWF under two alternative managerial regimes are compared: politician with the prospect of elections (*political management* – *PM*) and external manager with pecuniary self-interest motives (*external management* – *EM*). It is shown under which conditions the external manager produces higher output than the politician.

5.1 Output generated in the SWF with the politician

There are three possible cases to examine in order to describe the expected output of the SWF with a politician as a manager. If the competence level of the officeholder is high enough, he does not divert any resources in the first period (compare (7)), produces his highest possible output level, is reelected for sure and does not extract resources in the second period. If the incumbent identifies that his competence is low and he is not able to generate the output required to be reelected, he extracts the highest possible level of personal rents in the first period and is replaced by a new politician through elections. The incumbent with the moderate competence level diverts some resources but generates also the desired minimum level of output in the first period so as to be reelected and to obtain the possibility of diverting the maximum in the second period. Hence the expected output over two periods of the SWF with a politician as manager is given as follows:

$$\begin{aligned} E(Y^{PM}) = & \Pr\{\theta \leq 1\} [E(\theta(e - \bar{r}) + \theta^{new}(e - \bar{r}))] + \Pr\left\{\theta > \frac{1}{\xi}\right\} [E(\theta e + \theta e + \lambda)] + \\ & + \Pr\left\{1 < \theta \leq \frac{1}{\xi}\right\} [E(\tilde{y} + \theta(e - \bar{r}) + \lambda)] \end{aligned} \quad (26)$$

Given the distribution of θ , equation (18) and the fact that $E(\theta^{new}) = 1 < \frac{1}{\xi}$, (26) yields (Appendix A.1):

$$E(Y^{PM}) = 2e - \bar{r} + \frac{1}{8} \frac{e}{\delta} + \frac{1}{8} \frac{\bar{r}}{\delta} + \frac{\lambda}{2} + \delta \frac{R}{\xi} + \delta \lambda + \frac{3}{2} \delta \bar{r} + \frac{\delta e}{\xi} - \frac{\delta e}{2} - \frac{\delta \bar{r}}{2\xi^2} - \frac{\delta e}{2\xi^2} \quad (27)$$

5.2 Output generated in the SWF with the external manager

There are two possibilities to examine in order to describe the expected output of the SWF with an external manager: Either the manager is competent enough so that

he does not divert resources and thus generates his maximum level of output, or his ability is too low so that he decides to extract the maximum possible level of rents. In this case, the expected output over two periods with an external manager is given as follows:

$$E(Y^{EM}) = \Pr \left\{ \theta^m \leq \frac{1}{\xi + \beta} \right\} [E(\theta^m(e^m - \bar{r}) + \theta^m(e^m - \bar{r}) + \lambda)] + \\ + \Pr \left\{ \theta^m > \frac{1}{\xi + \beta} \right\} [E(\theta^m e^m + \theta^m e^m + \lambda)] \quad (28)$$

Given the distribution of θ , (28) yields (Appendix A.2):

$$E(Y^{EM}) = 2e^m - \bar{r} + \lambda + \delta\bar{r} + \frac{1}{4}\frac{\bar{r}}{\delta} - \frac{\delta\bar{r}}{(\xi + \beta)^2} \quad (29)$$

5.3 Comparison of outputs and the social optimum

From the social planner's point of view the optimal choice of managerial regime for the SWF maximises the expected output of the SWF. The expected outputs generated under both alternative regimes are compared: A SWF run by an external manager performs better than a SWF with the politician as manager, if $E(Y^{EM}) \geq E(Y^{PM})$. Using (27) and (29) and rearranging, this requirement becomes:

$$2e^m - 2e + \frac{e}{2} \left(\delta - \frac{1}{4\delta} \right) + \frac{\delta e}{\xi} \left(\frac{1}{2\xi} - 1 \right) + \lambda \left(\frac{1}{2} - \delta \right) - \frac{1}{2}\delta\bar{r} + \frac{1}{8}\frac{\bar{r}}{\delta} + \frac{\delta\bar{r}}{2\xi^2} - \frac{\delta\bar{r}}{(\xi + \beta)^2} \geq \delta\frac{R}{\xi} \quad (30)$$

One can see that higher ego-rents from holding the office R make the SWF with a PM performing better. The only reason of this is that a higher ego-rent implies a higher required level of output as an electoral rule (compare (18)).

It is also obvious that an increase of the average output e^m due to the transparency effect of involving an external manager improves the performance of the SWF.

Stronger pecuniary self-interest motives deliver stronger incentives for the manager to generate higher output, improving in this manner the case of external management.

There are two opposite learning effects to be weighed against each other: On the one hand, the learning effect exists definitely for the external manager due to the long term job contract, while the politician is reelected only with probability $\frac{1}{2}$. Hence the "pure" learning effect strengthens in sum the case of EM. But, on the other hand, there is also a positive effect of learning-by-doing on the output level required by voters as an election rule so that the expected output of the PM is higher. Thus, the aggregate effect depends on the uncertainty about the politician's competence given by δ .

Appendix A.3 contains the first derivatives of the condition (30) with respect to parameters \bar{r} , δ and ξ . These parameters' influence on differences of outputs generated under two alternative regimes are ambiguous and depend on parameters' constellation because of numerous opposite effects. For example, the maximum possible amount of diverted resources \bar{r} has an impact not only on the output level of each period generated under two management regimes, but also on the output level required by voters as an election rule for the politician.

6 Delegation of decision making power to an external manager

This section analyses whether the incumbent has any incentives to delegate his policy decision in the SWF to an external manager. In the case that the politician decides to delegate, the output generated in the SWF will not signal his competence level. Thus, the politician has no more influence on his reelection probability which is in this case $\frac{1}{2}$. Recall that, on the other hand, once hired, the external manager cannot be dismissed from his job, even if he diverts resources or is incompetent. The long-term job contract of the manager ensures his independence from politics and improves the governance and transparency of the SWF signalling in this manner to the rest of world the pure commercial nature of the SWF's behaviour. Hence, the two relevant functions of elections - as a disciplining mechanism for the officeholder and as a mechanism to select a competent officeholder - disappear. On the benefit side of delegation, three positive effects are identified: Increase of the *transparency* of a SWF and the associated raise of the average output, *pecuniary self-interest motives* that discipline the manager and create incentives to generate greater output and the *learning-by-doing* effect which is in the case of the manager present with probability 1. To sum up, the delegation decision made by politician trades-off the costs of having an incompetent manager (who may be negligent as well) with a long-term job contract against the benefits from transparency, learning effects and pecuniary self-interest motives. The politician compares his expected utility from being in the office $E(\nu^P)$ with his expected utility from the SWF under external managerial regime $E(\nu^{EM})$. The expected utility of the politician from the SWF with an external manager is given by:

$$E(\nu^{EM}) = \xi E(Y^{EM}) + \frac{1}{2}R \quad (31)$$

And the expected utility if the politician manages the SWF by himself depends on his competence level θ^P :

$$E(\nu^P) = \begin{cases} \xi\theta^P(e - \bar{r}) + \bar{r} + \xi E(\theta^{new}(e - r_2)) & \text{if } \theta^P \leq 1 \\ \xi\tilde{y} + \tilde{r}_1 + R + \xi(\theta^P(e - \bar{r}) + \lambda) + \bar{r} & \text{if } 1 < \theta^P \leq \frac{1}{\xi} \\ \xi\theta^P e + R + \xi(\theta^P e + \lambda) & \text{if } \theta^P > \frac{1}{\xi} \end{cases} \quad (32)$$

Recall that $E(\theta^{new}) = 1 < \frac{1}{\xi}$ so that $E(r_2 | \theta^{new}) = \bar{r}$.

Thus, delegation takes place if

$$E(\nu^{EM}) \geq E(\nu^P) \quad (33)$$

All possible cases for politician's competence level are examined in Appendix A.4:

The ego-rent from holding the office R

From point of view of the politician with low competence the EM is strengthened if the ego-rent from holding the office increases. The bad incumbent is sure to be not reelected, while if he delegates the policy decision in SWF to an external manager, there will be a reelection probability of $\frac{1}{2}$ and an expected ego-rent of $\frac{1}{2}R$. Thus, the increase of R makes the delegation more preferable.

The higher the competence level of the incumbent, the less attractive is the delegation of decision making if the ego-rent from holding the office increases. There are two effects to be weighed against each other: On the one hand, the reelection motive strengthens the case of the PM with greater R . On the other hand, the level of ego-rent obtained from holding the office plays an important role for the voters' required level of output and thereby has also an influence on the personal rent extracted in the first period. The greater R , the higher is the required level of output which implies smaller personal rents in the first period. This processing tends to have a negative impact on the expected utility of the incumbent in the PM because he is more interested in the level of personal rents (due to the fact that $\theta^P \leq \frac{1}{\xi}$). If the competence of the politician and the share of the output consumed are high enough, this negative tendency is compensated, and the politician is able to extract higher rents still generating the required level of output. Thus, if the competence level of the politician is high enough (Appendix A.4), the case of PM is strengthened by greater ego-rent from holding the office.

The politician with the highest competence level favours to maintain the decision making power if R increases.

Learning-by-doing λ

It is obvious that the learning effect strengthens the delegation case from the point of view of an incompetent politician. This type of officeholders is never reelected. Hence, there are learning effects only in case of the external manager with long-term job contract.

With higher levels of competence “second order” effects come into existence: An important role is played by the learning effect’s influence on the voters’ required level of the output and thereby on the personal rent obtained in the first period. The logic is as follows: due to the fact that the politician with higher-than-average competence level ($1 < \theta^P \leq \frac{1}{\xi}$) is more interested in the level of personal rents, the net effect of learning-by-doing weakens the PM. The impact of the “pure” learning effect λ on the decision to delegate equals zero because both the politician and the external manager will hold the office for both periods. The latter holds for most competent politicians as well.

Pecuniary self-interest motives β

Stronger pecuniary self-interest motives have a positive effect on the choice whether to delegate the decision making power to an external manager. This effect is independent from the politicians’ competence levels. The stronger the linkage of manager’s wage to the produced output level, the smaller the probability that he will be diverting resources given his competence level. In other words, parameter β has a direct impact on manager’s diligence and raises the expected output from the external manager. The last term on the left-hand side of inequalities (37), (41) and (44) describes the negative effect of the possibility to divert maximum amount of resources \bar{r} on the level of SWF’s output (weighted with the measure of uncertainty δ due to de distribution of mangers competence θ^m). This effect is alleviated by the disciplining function of pecuniary self-interest motives and multiplied by ξ because the politician is only interested in the share of output that can be consumed by himself.

In general, the self-interest motives described by linking manager’s wage to the generated output allegorise a kind of mechanism for the external manager that disciplines him and forces him to be more diligent.

Transparency effects on the average output of SWF e^m

The parameter e^m in our simple theoretical model framework captures the effect of increased transparency on the SWF’s average output due to the involvement of an external manager. The outsourcing of the SWF’s management signals the commercial

nature of the fund's activities. In turn, this ensures the international legitimacy of the SWF and opens the entry to markets and industries that might be inaccessible for opaque, foreign government run investment authorities. From the perspective of simple portfolio theory the latter improves portfolio diversification options and results in higher average returns.

At first, it is obvious that the higher the average output of the SWF with an external manager, the more attractive the case for delegation from the perspective of any politician. However, it makes more sense to look at the difference between average outputs of SWF under both alternative regimes. And in this case, the competence level of each particular politician plays an important role. The expressions in first brackets of each condition (37), (41) and (44) demonstrate that the higher the competence of the incumbent politician, the greater has to be the increase of the average output due to the transparency gain in order to make the delegation justifiable from point of view of the politician. However, the effect of increased average output on the delegation decision is weakened through the parameter ξ because the politician is only interested in the share of output that he consumes. One can see that smaller ξ dilute the effect of greater e^m .

The range of uncertainty about the competence level of the external manager δ

In Appendix A.4, it is shown how the parameter δ describing the range of uncertainty affects the incumbent's decision to delegate the policy tasks in the SWF. The rationale is valid from the perspective of each particular officeholder with given competence level because there exists uncertainty only about the manager's behaviour. Therefore, δ affects only the expected output of the external management. The expected output is affected by δ through two channels: The probability that the external manager will be diverting resources and the expected level of his competence (given that he will be negligent). The latter increases in δ . This has a negative impact on the politician's delegation decision because, given that the external manager will be diverting resources, higher expected competence implies higher opportunistic costs of delegation in the form of foregone output associated with diverted resources. The reaction of the diverting probability to δ depends on the critical value $\frac{1}{\xi+\beta}$ (compare (23) and Appendix A.1).

In the case that the manager's pecuniary self-interest motives are weak, so that $\frac{1}{\xi+\beta} \geq 1$, the probability of being negligent increases in δ . This implies that both effects act simultaneously in the same direction. Thus, in this case the delegation is more attractive from the politician's point of view the **greater the uncertainty** about the competence of the candidates (the smaller δ).

With strong enough pecuniary self-interest motives, so that $\frac{1}{\xi+\beta} < 1$, the probability effect turns to the opposite direction and the both effects mentioned above have to be weighed against each other. For high enough δ the probability effect dominates and makes the delegation more attractive with **smaller uncertainty** (greater δ).

Summing up, one can see the interaction between uncertainty about candidate's competence and pecuniary self-interest motives. In general, the disciplining effect of self-interest motives is opposite to the uncertainty impacts: Greater uncertainty about the ability of the external manager makes the politician manage the SWF by himself. But if it is known that the candidates have strong enough pecuniary motives, this effect is alleviated.

The maximum possible amount of diverted resources \bar{r}

The impact of the maximum possible amount of resources that can be diverted on the delegation decision depends on the competence level of the politician holding the office. The officeholder with the highest competence level ($\theta^P > \frac{1}{\xi}$) never diverts resources. However, there is a probability that the external manager will be diverting. So the increase in level of resources allowed to divert reduces the expected output of the SWF under EM and has a negative effect on the delegation. But if there exists a strong enough disciplining mechanism for the manager, this will reduce the negative effect of diverting resources.

The comparison of (39) and (42) (Appendix A.4) shows that the effect of \bar{r} is likely to be negative in the case of a bad politician ($\theta^P \leq 1$) if ξ and θ^P are small enough ($1 > \xi(1 + \theta^P)$). The intuition is that the politician diverts always the maximum possible amount of resources because $\theta^P \leq 1$. There is also a positive probability that the external manager will be diverting \bar{r} . The smaller the part ξ of the output consumed by the politician the stronger his preference to keep the decision making power for himself in order to have a possibility to divert resources.

The argument described above is valid for the politician with the higher-than-average ($1 < \theta^P \leq \frac{1}{\xi}$) competence as well. But there are also other additional effects because \bar{r} affects the voters' required level of output \tilde{y} and the personal rent extracted in the first period \tilde{r}_1 . Namely, on the one hand, the increase of \bar{r} raises the output and reduces the extracted rent, making the case of PM less attractive (because the politician is more interested in rents due to the fact that $\theta^P \leq \frac{1}{\xi}$). On the other hand, the increase of \bar{r} reduces the expected output generated under EM. If the parameter ξ is small enough, the reduction of \tilde{r}_1 under PM becomes insignificant, and the expected output consumed by the politician under EM becomes smaller (not only because ξ is the share of output consumed but also due to the fact that the decrease of ξ raises the probability of diverting). These effects in all make the case of delegation less attractive

if ξ is small enough.

To summarise, the effect of \bar{r} on the delegation decision relies inter alia on the incumbent's competence level and on the SWF nature: For example, from the perspective of an average competent politician holding the office in a SWF producing a public goods ($\xi = 1$) the delegation can be more attractive the higher \bar{r} .

The share of the SWF output consumed by each individual ξ

On the one hand, the parameter ξ describes the share of SWF's output that is consumed by each individual and accordingly by the politician as well. But on the other hand, ξ defines also the critical competence level of the external manager which is important for his resource-diverting behaviour: The probability of being negligent decreases in ξ . Due to the fact that the delegation decision is based just on the comparison of the output shares that can be consumed under both alternative regimes, greater ξ might have a negative impact from the point of view of the competent politician with $\theta^P > \frac{1}{\xi}$. This occurs if the a priori transparency gain from the external management expressed by the increase of the average output is not high enough ($e^m < \theta^P e$). Comparing the expressions (40) and (43) (Appendix A.4) one can see that in the case of an incompetent officeholder the effect of increasing ξ tends to be positive even if e^m just exceeds e .

The effects mentioned above are also valid for the incumbent with higher-than-average competence level ($1 < \theta^P \leq \frac{1}{\xi}$). But there are again additional effects due to the fact that the increase of ξ raises the voters' required level of output and reduces the extracted personal rent in the first period, making the case of PM less attractive (because $\theta^P \leq \frac{1}{\xi}$). The last two terms of the expression (46) demonstrate this negative impact.

Summing up, the bad incumbent tends to delegate with higher shares of the SWF's output that can be consumed. However, there is greater possibility that the effect of increasing ξ on the delegation decision will be negative from the perspective of the incumbent with higher-than-average competence. The reason is that there exist "second order" effects created by the election mechanism while the politician with the highest ability just compares consumption possibilities. An important role in the delegation decision is played by the transparency effect's influence on the average output generated under EM which is depicted in our model by the parameter e^m .

Appendix A.5 shows whether the delegation improves the social welfare. It is shown that in the case of politicians with either the highest ($\theta^P > \frac{1}{\xi}$) or higher-than-average ($1 < \theta^P \leq \frac{1}{\xi}$) competence level if the delegation occurs, it is always socially optimal. However, in the case of an incompetent officeholder ($\theta^P \leq 1$) this result is probably distorted by an inverse incentive provided by the value of the office R : Higher ego-

rents from holding the office lead the incompetent politician to delegate in order to get reelection chances because otherwise he is never reelected. Therefore, with higher R delegation is possible even if the output generated by the politician exceeds the expected output from EM. This occurs due to the fact that the delegation decision is driven by the expectation for higher ego-rent. One can see that under certain circumstances the delegation does not take place even though it would improve social welfare.

7 Conclusion

In this paper I developed a simple two period model with elections at the end of the first period in order to examine the incentives underlying the decision of a politician to delegate the management of a sovereign wealth fund to an independent external manager. Through the mechanism of elections the voters not only get the possibility to control the moral hazard problem but also try to solve the adverse selection problem of the incumbent. Although the model is defined in a general manner it introduces also specific details describing the functioning of SWFs. The model contains some special components describing the policy task delegation issues that have been studied separately in the previous literature. I combine these building blocks and formalise the delegation motives: learning effects (Arrow 1962) and the increase of SWF's average return due to the management outsourcing. The latter signals the commercial nature of SWF's investment decisions and improves portfolio diversification options (Rozanov 2009). On the other side, I build in two disciplining mechanisms for the politician and for the external manager: elections (Persson, Roland and Tabellini 1997) and pecuniary self-interest motives (Holmström 1999). The politician weighs the costs of not being manager of the SWF in the form of forgone personal rents and the possible loss of having an incompetent manager against the benefits from transparency effects, learning-by-doing and disciplining pecuniary self-interest motives. The politician loses with delegation the possibility to signal his competence to electorate using the SWF's output. However, this turns into an advantage for incompetent incumbents because the delegation delivers reelection chances.

Furthermore, several lessons become apparent from the model. One is that the increase of SWF's average productivity as a consequence of management outsourcing and fund's higher transparency improves social welfare. However, the influence of increased productivity on the politician's delegation motivation is strongly linked to the competence level of the officeholder and to the character of a SWF: The positive effect on delegation motives is strongest if there is a SWF providing public goods (for example, an infrastructure fund). Another is that if the delegation occurs, it is socially optimal if

the ego-rent of holding the office is small enough. Higher ego-rents from a political office deliver incentives for the incompetent politician to delegate the policy task in order to obtain a reelection chance even if the expected output from the external managerial regime is small. However, the reverse is not true, i.e. under certain circumstances the management of SWF won't be delegated even if the delegation improves social welfare. The "pure" effect of learning-by-doing on the delegation decision plays an important role only in the case of an incompetent politician. Since incumbents with higher competence have the possibility to win the elections, the "pure" learning effect completely disappears and "second order" effects arise. These act through election mechanism increasing the required and at the same time the produced output level and reducing the possibility to extract personal rents from the office. However, this weakens the case of the political management and delivers an additional incentive to delegate because the average competent politician is more interested in personal rents. The range of uncertainty about manager's competence plays an interesting role on the delegation decision: In most cases, the smaller is the uncertainty about manager's ability, the more attractive is the delegation of SWF's management from the politician's perspective. However, if the disciplining effect of pecuniary self-interest motives is small enough, greater uncertainty may reduce the probability of being negligent and may thereby improve the delegation.

To conclude, I underline some limitations of the framework and indicate some directions for further research. Perhaps one of the most important limitations is the assumption of only two periods in our model. But although the existence of the "last" period and the absence of elections after the second period lead incumbents to behave in a negligent way in their final term, there exist incentives for voters to elect the most possible competent politician from the pool of candidates. The extension of time horizon would not only solve this last-period-problem but also help to avoid the limitations in election rule. I considered "myopic" voters who are interested only in reelecting the incumbent if he generates higher expected output in the second period relative to the randomly elected new politician. The existence of several periods would deliver the possibility to examine the behaviour of voters that maximize through elections their expected utility over the whole time horizon which is more realistic. Another point is that I have assumed the delegation to be a *zero/one* decision. The practice shows that a plenty of SWFs allocate only some portions of their funds to external managers or launch new investment vehicles that are managed externally. In respect thereof, one can address the question of optimal degree of delegation from perspective of SWF as well as society.

I hope that the framework presented in this paper will be helpful in addressing these important questions in future work.

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A Appendix

A.1 Expected output of the SWF with a politician

If θ is uniformly distributed over the interval $[1 - \frac{1}{2\delta}, 1 + \frac{1}{2\delta}]$,

$$\begin{aligned}
\Pr\{\theta \leq 1\} &= \frac{1}{2} \\
E(\theta | \theta \leq 1) &= \frac{1 + (1 - \frac{1}{2\delta})}{2} = 1 - \frac{1}{4\delta} \\
\Pr\left\{1 < \theta \leq \frac{1}{\xi}\right\} &= \Pr\left\{\theta \leq \frac{1}{\xi}\right\} - \Pr\{\theta \leq 1\} = \frac{\frac{1}{\xi} - (1 - \frac{1}{2\delta})}{1 + \frac{1}{2\delta} - (1 - \frac{1}{2\delta})} - \frac{1}{2} = \frac{\delta}{\xi} - \delta \\
E\left(\theta \middle| 1 < \theta \leq \frac{1}{\xi}\right) &= \frac{1 + \frac{1}{\xi}}{2} = \frac{1}{2} + \frac{1}{2\xi} \\
\Pr\left\{\theta > \frac{1}{\xi}\right\} &= 1 - \Pr\left\{\theta \leq \frac{1}{\xi}\right\} = 1 - \frac{\frac{1}{\xi} - (1 - \frac{1}{2\delta})}{1 + \frac{1}{2\delta} - (1 - \frac{1}{2\delta})} = \frac{1}{2} - \frac{\delta}{\xi} + \delta \\
E\left(\theta \middle| \theta > \frac{1}{\xi}\right) &= \frac{\frac{1}{\xi} + (1 + \frac{1}{2\delta})}{2} = \frac{1}{2\xi} + \frac{1}{2} + \frac{1}{4\delta}
\end{aligned}$$

Thus

$$\begin{aligned}
E(Y^{PM}) &= \Pr\{\theta \leq 1\} [E(\theta(e - \bar{r}) + \theta^{new}(e - \bar{r}))] + \Pr\left\{\theta > \frac{1}{\xi}\right\} [E(\theta e + \theta e + \lambda)] + \\
&\quad + \Pr\left\{1 < \theta \leq \frac{1}{\xi}\right\} [E(\tilde{y} + \theta(e - \bar{r}) + \lambda)] = \\
&= \frac{1}{2} \left(\left(1 - \frac{1}{4\delta}\right) (e - \bar{r}) + (e - \bar{r}) \right) + \left(\frac{1}{2} - \frac{\delta}{\xi} + \delta\right) \left(2e \left(\frac{1}{2\xi} + \frac{1}{2} + \frac{1}{4\delta}\right) + \lambda\right) + \\
&\quad + \left(\frac{\delta}{\xi} - \delta\right) \left(e + \frac{R + \lambda\xi + \xi\bar{r}}{1 - \xi} + \left(\frac{1}{2} + \frac{1}{2\xi}\right) (e - \bar{r}) + \lambda\right) = \\
&= 2e - \bar{r} + \frac{1}{8} \frac{e}{\delta} + \frac{1}{8} \frac{\bar{r}}{\delta} + \frac{\lambda}{2} + \delta \frac{R}{\xi} + \delta\lambda + \frac{3}{2} \delta \bar{r} + \frac{\delta e}{\xi} - \frac{\delta e}{2} - \frac{\delta \bar{r}}{2\xi^2} - \frac{\delta e}{2\xi^2}
\end{aligned}$$

A.2 Expected output of the SWF with an external manager

For the external manager θ is uniformly distributed over the interval $[1 - \frac{1}{2\delta}, 1 + \frac{1}{2\delta}]$ as well, i.e.

$$\begin{aligned}
\Pr\left\{\theta^m \leq \frac{1}{\xi + \beta}\right\} &= \frac{\frac{1}{\xi + \beta} - (1 - \frac{1}{2\delta})}{1 + \frac{1}{2\delta} - (1 - \frac{1}{2\delta})} = \frac{1}{2} + \frac{\delta}{\xi + \beta} - \delta \\
E\left(\theta^m \middle| \theta^m \leq \frac{1}{\xi + \beta}\right) &= \frac{\frac{1}{\xi + \beta} + (1 - \frac{1}{2\delta})}{2} = \frac{1}{2(\xi + \beta)} + \frac{1}{2} - \frac{1}{4\delta}
\end{aligned}$$

$$\Pr \left\{ \theta^m > \frac{1}{\xi + \beta} \right\} = 1 - \Pr \left\{ \theta^m \leq \frac{1}{\xi + \beta} \right\} = \frac{1}{2} - \frac{\delta}{\xi + \beta} + \delta$$

$$E \left(\theta^m \mid \theta^m > \frac{1}{\xi + \beta} \right) = \frac{\frac{1}{\xi + \beta} + \left(1 + \frac{1}{2\delta}\right)}{2} = \frac{1}{2(\xi + \beta)} + \frac{1}{2} + \frac{1}{4\delta}$$

Thus

$$\begin{aligned} E(Y^{EM}) &= \Pr \left\{ \theta^m \leq \frac{1}{\xi + \beta} \right\} [E(\theta^m(e - \bar{r}) + \theta^m(e - \bar{r}) + \lambda)] + \\ &\quad + \Pr \left\{ \theta^m > \frac{1}{\xi + \beta} \right\} [E(\theta^m e + \theta^m e + \lambda)] = \\ &= \left(\frac{1}{2} + \frac{\delta}{\xi + \beta} - \delta \right) \left(2 \left(\frac{1}{2(\xi + \beta)} + \frac{1}{2} - \frac{1}{4\delta} \right) (e^m - \bar{r}) + \lambda \right) + \\ &\quad + \left(\frac{1}{2} - \frac{\delta}{\xi + \beta} + \delta \right) \left(2 \left(\frac{1}{2(\xi + \beta)} + \frac{1}{2} + \frac{1}{4\delta} \right) e^m + \lambda \right) = \\ &= 2e^m - \bar{r} + \lambda + \delta\bar{r} + \frac{1}{4}\frac{\bar{r}}{\delta} - \frac{\delta\bar{r}}{(\xi + \beta)^2} \end{aligned}$$

A.3 Comparison of outputs and the social optimum

The first derivative of the left-hand side of (30) with respect to \bar{r} is:

$$\frac{1}{8\delta} - \frac{1}{2}\delta + \frac{\delta}{2\xi^2} - \frac{\delta}{(\xi + \beta)^2} \quad (34)$$

The first derivative of the condition (30) with respect to δ is:

$$\left(\frac{1}{2} + \frac{1}{8\delta^2} \right) (e - \bar{r}) + \frac{e}{2\xi^2} - \frac{e}{\xi} + \frac{\bar{r}}{2\xi^2} - \frac{\bar{r}}{(\xi + \beta)^2} - \frac{R}{\xi} \quad (35)$$

The first derivative of the condition (30) with respect to ξ is:

$$\frac{\delta e}{\xi^2} - \frac{\delta e}{\xi^3} - \frac{\delta\bar{r}}{\xi^3} + \frac{\delta R}{\xi^2} + \frac{2\delta\bar{r}}{(\xi + \beta)^3} \quad (36)$$

A.4 Decision of the politician to delegate

1. Politician with $\theta^P > \frac{1}{\xi}$ (highest competence)

In this case, condition (33) turns into:

$$2\xi(e^m - \theta^P e) - \bar{r}\xi + \delta\bar{r}\xi + \frac{1}{4}\frac{\bar{r}}{\delta}\xi - \frac{\delta\bar{r}\xi}{(\xi + \beta)^2} \geq \frac{R}{2} \quad (37)$$

- (a) One can see that the case of the PM is strengthened if the ego-rent from holding the office increases. The competent incumbent is sure to be reelected

and to obtain R , while under EM the probability of reelection is just $\frac{1}{2}$.

- (b) Stronger pecuniary self-interest motives have also a positive effect on the decision to delegate.
- (c) It is obvious that, ceteris paribus, the greater the average output e^m of the SWF under EM, the better is the delegation for the politician. But this effect is linked to the parameter ξ . If ξ is small enough the effect of higher e^m becomes insignificant.
- (d) The first derivative of the left-hand side of (37) with respect to δ is:

$$\bar{r}\xi - \frac{1}{4} \frac{\bar{r}}{\delta^2} \xi - \frac{\bar{r}\xi}{(\xi + \beta)^2} \quad (38)$$

The impact of the parameter δ on the delegation decision depends on the critical value $\frac{1}{\xi + \beta}$ which on his part affects the manager's diligence. The parameter δ has an influence on the probability $\Pr\left\{\theta^m \leq \frac{1}{\xi + \beta}\right\}$ and on the expected value of the candidate's competence level $E\left(\theta^m \mid \theta^m \leq \frac{1}{\xi + \beta}\right)$:

- i. If $\frac{1}{\xi + \beta} \geq 1$, then the expression (38) becomes definitely negative due to the fact that $\frac{\partial \Pr\{\theta^m \leq \frac{1}{\xi + \beta}\}}{\partial \delta} \geq 0$ and $\frac{\partial E(\theta^m \mid \theta^m \leq \frac{1}{\xi + \beta})}{\partial \delta} > 0$. This implies that the **greater the uncertainty** about the competence of the candidates (the smaller δ), the more attractive the delegation for the politician.
- ii. If $\frac{1}{\xi + \beta} < 1$, there are two effects to be weighed against each other: $\frac{\partial \Pr\{\theta^m \leq \frac{1}{\xi + \beta}\}}{\partial \delta} < 0$ and $\frac{\partial E(\theta^m \mid \theta^m \leq \frac{1}{\xi + \beta})}{\partial \delta} > 0$. If the first effect dominates (and this is true for high enough δ), the delegation becomes more attractive for the incumbent the **smaller the uncertainty** (the greater δ).
- (e) The first derivative of the left-hand side of (37) with respect to \bar{r} is:

$$\left(\delta\xi - \xi + \frac{1}{4} \frac{\xi}{\delta}\right) - \frac{\delta\xi}{(\xi + \beta)^2} \quad (39)$$

The expression in first parentheses is always nonnegative for $\xi, \delta > 0$. The smaller β the greater is the possibility that the whole expression becomes negative.

- (f) The first derivative of the left-hand side of (37) with respect to ξ is:

$$2(e^m - \theta^P e) + \left(\delta\bar{r} - \bar{r} + \frac{1}{4} \frac{\bar{r}}{\delta}\right) + \frac{\delta\bar{r}(\xi - \beta)}{(\xi + \beta)^3} \quad (40)$$

where the expression in second parentheses is always nonnegative. In the

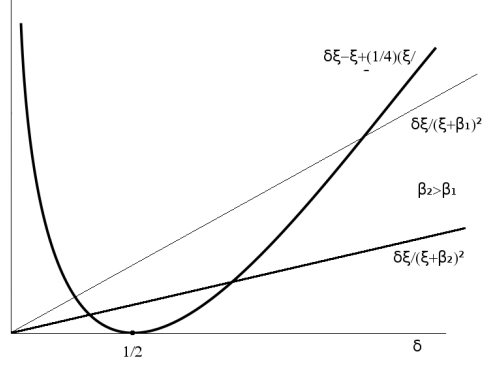


Figure 2: $(\delta\xi - \xi + \frac{1}{4}\frac{\xi}{\delta}) - \frac{\delta\xi}{(\xi+\beta)^2}$ for two different β

case of $e^m > \theta^P e$ and $\xi > \beta$ the whole expression becomes positive.

2. Politician with $\theta^P \leq 1$ (low competence)

In this case, condition (33) yields:

$$\xi (2e^m - \theta^P e - e) + \lambda\xi + \delta\bar{r}\xi + \frac{1}{4}\frac{\bar{r}}{\delta}\xi + \frac{R}{2} - \frac{\delta\bar{r}\xi}{(\xi + \beta)^2} \geq \bar{r} - \bar{r}\xi\theta^P \quad (41)$$

- (a) One can easily prove that in contrast to the case with good politician ($\theta^P > \frac{1}{\xi}$) in this case of a bad one ($\theta^P \leq 1$) the PM is weakened if the ego-rent from holding the office increases.
- (b) It is also obvious that learning effect λ strengthens the delegation case.
- (c) The greater β , the better is the delegation.
- (d) Greater difference between average outputs of SWF under both regimes ($e^m - e$) improves the delegation. However, this effect is linked to the parameter ξ . If ξ is small enough the effect of higher e^m becomes insignificant.
- (e) The effect of the range of uncertainty (or parameter δ) about the competence of candidates remains the same (compare (37) and (41)).
- (f) The first derivative of (41) with respect to \bar{r} is:

$$\left(\delta\xi + \frac{1}{4}\frac{\xi}{\delta}\right) - (1 - \xi\theta^P) - \frac{\delta\xi}{(\xi + \beta)^2} \quad (42)$$

where the expression becomes positive if δ and β are high enough.

- (g) The first derivative of (41) with respect to ξ is:

$$(2e^m - \theta^P e - e) + \left(\delta\bar{r} + \frac{1}{4}\frac{\bar{r}}{\delta}\right) + \frac{\delta\bar{r}(\xi - \beta)}{(\xi + \beta)^3} + \lambda + \theta^P\bar{r} \quad (43)$$

where the whole expression becomes definitively positive if $\xi > \beta$.

3. Politician with $1 < \theta^P \leq \frac{1}{\xi}$ (higher-than-average competence)

In this case, condition (33) becomes:

$$\begin{aligned} & \left(2\xi e^m - \xi e(1 + \theta^P) - e \left(1 - \frac{1}{\theta^P} \right) \right) + \delta \bar{r} \xi - \xi \bar{r} + \frac{1}{4} \frac{\bar{r}}{\delta} \xi + \frac{\xi \bar{r}}{1 - \xi} \left(\frac{1}{\theta^P} - \xi \right) - \\ & - (1 - \xi \theta^P) \bar{r} - \frac{\delta \bar{r} \xi}{(\xi + \beta)^2} \geq \frac{R}{2} - \frac{(1 - \xi \theta^P)}{\theta^P (1 - \xi)} R - \frac{(1 - \xi \theta^P)}{\theta^P (1 - \xi)} \lambda \xi \end{aligned} \quad (44)$$

- (a) One can see that the impact of the ego-rent from holding the office on the delegation decision is ambiguous. If the competence level of the politician is high enough (i.e. $\theta^P (1 + \xi) > 2$), the case of the PM is strengthened.
- (b) Both the politician and the external manager will hold the office for both periods so that the “pure” learning effect is not relevant. The only thing that plays an important role is the learning effect’s influence on the required level of the output and thereby on the personal rent obtained in the first period.
- (c) The greater β , the better is the delegation.
- (d) The greater the average output of the SWF under EM relative to the alternative PM’s average output, the more attractive is the delegation for the politician.
- (e) The effect of the range of uncertainty (or parameter δ) about the competence of candidates remains the same (compare (37) and (44)).
- (f) The first derivative of the left-hand side of (44) with respect to \bar{r} is:

$$\left(\delta \xi - \xi + \frac{1}{4} \frac{\xi}{\delta} \right) - \frac{\delta \xi}{(\xi + \beta)^2} + (1 - \xi \theta^P) \left(\frac{\xi}{(1 - \xi) \theta^P} - 1 \right) \quad (45)$$

Comparing the expressions (39) and (45) one can show that the effect of \bar{r} is likely to be negative if ξ is small enough.

- (g) The first derivative of (44) with respect to ξ is:

$$\begin{aligned} & (2e^m - e - e\theta^P) + \left(\delta \bar{r} - \bar{r} + \frac{1}{4} \frac{\bar{r}}{\delta} \right) + \frac{\delta \bar{r} (\xi - \beta)}{(\xi + \beta)^3} + \theta^P \bar{r} - \\ & - \frac{R}{(1 - \xi)^2} \left(1 - \frac{1}{\theta^P} \right) + \frac{\bar{r} + \lambda}{(1 - \xi)^2} \left(\frac{1}{\theta^P} - 2\xi + \xi^2 \right) \end{aligned} \quad (46)$$

A.5 Comparison between Delegation and Social Optimum

Case 1 *Politician with $\theta^P > \frac{1}{\xi}$ (highest competence)*

In the case of the incumbent with highest competence level if the delegation occurs, it is always socially optimal (but not vice versa).

Proof. *The output generated by the politician is:*

$$Y = \theta^P e + \theta^P e + \lambda \quad (47)$$

The expected output generated under the EM is given by equation (29). Rewriting the delegation condition (37) yields:

$$\xi (E(Y^{EM}) - Y) \geq \frac{R}{2} \quad (48)$$

In turn, this implies $E(Y^{EM}) - Y \geq 0$ ■

Case 2 *Politician with $\theta^P \leq 1$ (low competence)*

In this case there exist a possibility that the delegation occurs even if it is socially not optimal.

Proof. *The expected output generated by the PM is:*

$$Y = \theta^P (e - \bar{r}) + \theta^P (e - \bar{r}) \quad (49)$$

The expected output generated under the EM is given by equation (29). Rewriting the delegation condition (41) yields:

$$\xi (E(Y^{EM}) - Y) \geq \bar{r} - \frac{R}{2} \quad (50)$$

In turn, this implies that for $R \leq 2\bar{r}$

$$E(Y^{EM}) - Y \geq 0 \quad (51)$$

And for $R > 2\bar{r}$ there exist possibilities that $E(Y^{EM}) - Y < 0$ ■

Case 3 *Politician with $1 < \theta^P \leq \frac{1}{\xi}$ (higher-than-average competence)*

In this case if the delegation occurs, it is always socially optimal (but not vice versa).

Proof. *The output generated by the politician is:*

$$Y = \tilde{y} + \theta^P(e - \bar{r}) + \lambda \quad (52)$$

The expected output generated under the EM is given by equation (29). Rewriting the delegation condition (44) yields:

$$\xi (E(Y^{EM}) - Y) \geq R + \bar{r} + \tilde{r}_1 \quad (53)$$

In turn, this implies $E(Y^{EM}) - Y \geq 0$ ■