Winning the Middle Ground: The Strategic Behaviour of Campaigners and Politicians on the Eighth Amendment Referendum

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The Issue of abortion and the upcoming referendum to determine the future of the Eighth Amendment to the constitution are perhaps the most current and pressing issue in Irish politics today. In this essay Mide Griffin examines the strategic interactions between pro-choice campaigners and politicians, whose preference is not known. Mide uses game theory to provide an in depth and comprehensive analysis of the optimal strategy politicians and campaigners should take in this strategic situation, and also highlights the important role of signalling and imperfect information in the interaction.

Introduction

Abortion is a contentious issue in Irish politics. A campaign is being led to repeal the Eighth Amendment of the constitution and liberalise abortion law. A Citizens' Assembly was conducted to discuss the issue and an Oireachtas Committee backed the majority of their recommendations (Irish Times, 2017a). While the government has agreed to hold a referendum in 2018, there is no consensus on the wording of this referendum, nor what would legislation would replace it. Both are deemed critical to the referendum outcome.

From a Repeal Campaign perspective, losing the referendum would be disastrous with the issue off the cards for another generation. While there is evidence that the majority are in favour of liberalisation, there is not the same support for fully unrestricted abortion (Irish Times, 2017b). Repeal advocates must carefully consider their campaign strategy to minimise the likelihood of losing while maximising their campaign objectives.

Game Setup

This essay considers the strategic interactions of campaigners and politicians during a Repeal lobbying campaign. The Dáil is under no obligation to follow the Oireachtas Committee's recommendations but will decide the wording of the referendum and will create draft legislation that would be implemented. Therefore, a crucial stage for a Repeal campaign is convincing TDs to vote for favourable wording and legislation. As parties are allowing open vote, alongside door-to-door campaigning, the Repeal Campaign needs to lobby TDs.

Politicians are assumed to be both policy-seeking and office-seeking. They a personal preference on abortion law but are also dependent on constituents for votes, and alter their policy stance to maximise their popularity. Some politicians may act purely on their principles taking a vocal stance for or against. Campaigners (and voters) are aware of these vocal candidates, but, in the early stages, do not know the preferences of many TDs. It is crucial for campaigners to target middle-ground TDs, who have not taken a strong stance, to swing the referendum in their favour. The Median Voter Theorem tells us that, under certain assumptions, the outcome preferred by the median voter will be decisive, so it is essential to target the middle-ground (Shepsle, 1997). Therefore, this essay deals with a signalling game between a Repeal campaigner and a middle-ground politician in a lobbying situation.

There are three stages to a signalling game. First, Nature chooses the sender's type. Second, the sender learns her type and chooses and action. Third, the Receiver observes the action, modifies her beliefs and chooses an action. Two types of middle-ground politician are assumed; one leans left of centre and the other right of centre. These are not extremes, but for convenience I will label the types of Player 1 (Politician) Conservative and Liberal. A campaigner (Player 2) approaches a politician to discuss the issue and the Politician can say she is decided on the matter and unwilling to discuss, or undecided and open to discussion. If the politician says she is unwilling to discuss the matter she is assumed to reveal her stance (for Repeal if liberal, against repeal if conservative) and the game ends. If the politician is undecided and open to debate the campaigner can take either a hardline stance or a moderate tone. The Politician can then choose to engage in or withdraw from fruitful discussion, and the game ends.

The choice between decided and undecided is costly, as the politician may lose votes by revealing their stance. The cost is different for the different types of politician. A conservative politician has more to lose from saying she is decided, as this reveals a stance unwilling to relax laws even slightly, assumed to alienate more voters than the liberal candidate revealing a pro-repeal stance, as the majority of voters are in favour of some liberalisation (Irish Times, 2017c). Undecided is therefore the dominant strategy for the Conservative politician.

Payoffs

The conservative politician always prefers to choose undecided over decided. The best outcome is engaging in a moderate stance. If a hardline stance is put forward, it is better to withdraw, than to engage, but it is worse to not engage in a moderate stance because it makes her look more anti-repeal. The worst outcome is not engaging at all.

U(Undecide,Moderate,Engage)>U(Undecide,Hardline,Withdraw)>U(Undecided, Hardline, Engage)> U(Undecided, Moderate,Withdraw)>U(Decided)

If the politician is of the liberal type, (bearing in mind that these are middle-ground candidates, just left of centre), the best outcome is to engage with a moderate stance, and avoid hardline aspects. She prefers say undecided if the campaigner takes a moderate stance, however if the campaigner takes a hard-line stance, she would rather say he is decided in favour, to avoid debating the hardline aspects she would rather not address. Following this, it is best simply say decided (thus seeming pro-repeal without getting into the gritty details). After this, for the liberal politician it is better to engage in the hardline stance than withdraw from discussion as this seems anti-repeal and would alienate liberal voters.

U(Undecide,Moderate,Engage)>U(Decided)>U(Undecided,Hardline,Engage)>U(Undecide, Hardline,Withdraw)>U(Undecided, Moderate,Withdraw)

The campaigner prefers to play a hard-line stance if the politician is liberal, in order to get the message across strongly, but would rather take a moderate tone if the politician is conservative in order to win the middle-ground instead of alienating them. She would rather the politician engages than withdraws. However, if she takes the wrong approach with a politician, it would be better had the discussed not progressed and the politician had chosen decided.

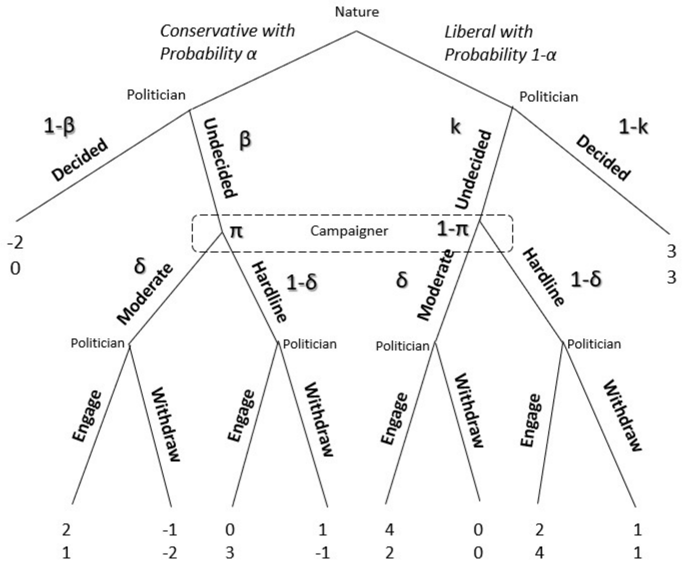
If politician is liberal:

U(Undecided, Hardline, Engage)>U(Decided)>U(Undecided, Moderate, Engage)>U(Undecided, Hardline,Withdraw)>U(Undecided, Moderate,Withdraw)

If politician is conservative:

U(Undecided, Hardline, Engage)>U(Undecided, Moderate, Engage)>U(Decided)>U(Undecided, Hardline,Withdraw)>U(Undecided, Moderate,Withdraw)

This is represented in the model below:



Scenario 1: $\alpha = {}^{3}/_{5}$, $1-\alpha = {}^{2}/_{5}$

First consider a game with the property that a politician is conservative with probability 0.6 and liberal with probability 0.4. Using backward induction, we can move the payoffs from the lower nodes up (see appendix). We then work from the information set.

The solution concept is Perfect Bayesian Equilibrium. Sequential rationality and consistent beliefs are needed for this. The Campaigner prefers a hardline stance when the expected utility to this is greater than moderate, given their beliefs of where she is in the game. This occurs when $\pi < {}^{1}/_{2}$, i.e. when the probability of a campaigner being conservative given Undecided was observed is less than ${}^{1}/_{2}$. However, this yields an impossible value of k (probability of liberal politician choosing Undecided), meaning the only possibility is when $\pi > {}^{1}/_{2}$ and k equalling one, such that $\pi = {}^{3}/_{5}$. (See Appendix). This is a unique pooling equilibrium whereby the posterior probabilities equal the prior probabilities. No information is revealed by the signal of observing Undecided, as the liberal type of politician always chooses Undecided.

Perfect Bayesian Equilibrium:

The liberal politician plays Undecided at the first node after the initial node where nature plays. Then if Moderate is played, choose Engage. If Hardline is played, choose Engage.

- The conservative politician plays Undecided, and then if Moderate is played, choose Engage and if Hardline is played, choose Withdraw.
- The Campaigner's Best response is to play Moderate.
- The Campaigner's beliefs are that Prob(conservative | Undecided) = $^3/_5$
- Due to imperfect information and no signal being given the campaigner can do no better than to play Moderate.

Scenario 2: $\alpha = {}^2/_5$, $1-\alpha = {}^3/_5$

Let us consider new underlying probabilities of the type of politician. This could be because the politician is from an urban, young constituency, or because voters' preferences become more liberal, thus making politicians more likely to be liberal. This yields a unique semi-separating equilibrium whereby the liberal type of politician mixes between choosing Decided and Undecided if the campaigner mixes between the hardline and moderate stance (see Appendix). If the campaigner mixes between M and H with probability ½, the liberal politician chooses UD with probability $^2/_3$ and D with probability $^2/_3$.

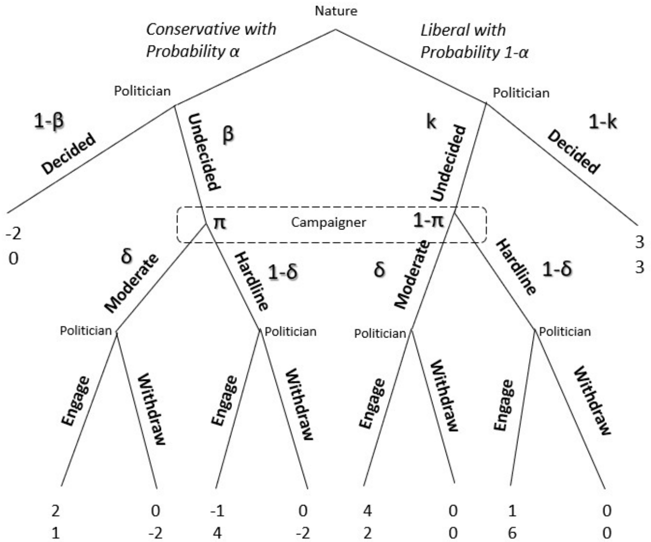
Perfect Bayesian Equilibrium:

- The Conservative Politician plays Undecided. Then, when Moderate is played, she plays Engage. When Hardline is played, she plays Withdraw.
- The Liberal Politician plays Undecided with probability $^2/_3$, and Decided with probability $^1/_3$. When Moderate is played, she plays Engage. When Hardline is played, she plays Engage.
- The Campaigner plays Moderate with probability ½, and Hardline with probability $^1/_2$)
- The Campaigner's beliefs are that Prob(Conservative | Undecided) = 1/2.

Now the Campaigner's best response is to mix between the moderate and the hardline stance with equal probability. So even with an increased likelihood of a politician being of the liberal type, imperfect information means she can do no better than mix at probability ½.

Scenario 3: $\alpha = {}^1/_2$, $1-\alpha = {}^1/_2$, Altered Payoffs.

Let us imagine the lobbying situation is assumed to be tight. The politicians whose stances remain unknown are deemed likely to swing either way and so the probability of the politician being Liberal/Conservative is 50:50. Further, the stakes are now higher, such that the payoffs from a hardline stance change for both players (they remain in the same order). For the campaigner, it becomes more important to take a hardline stance with a liberal politician and more detrimental to take a hardline stance with a conservative politician i.e. the outcomes from either politician engaging increase but the outcomes for withdrawing become worse. For the Politician, with a more heated debate and a more vigorous hardline stance, the payoffs to both types of politician from engaging in and withdrawing from the hardline stance become worse (again the order remains the same). The model with the adjusted payoffs is as follows.



Campaigner prefers Hardline if $\pi < {}^{4}/_{7}$. This is so when $k > {}^{3}/_{4}$. However, this is not a stable point (See appendix). The game yields a unique semi-separating equilibrium where the liberal politician chooses Undecided with probability ${}^{3}/_{4}$ and Decided with probability ${}^{1}/_{4}$ when the Campaigner mixes between the Moderate and Hardline stance, choosing Moderate with probability ${}^{2}/_{3}$ and Hardline with probability ${}^{1}/_{3}$.

Perfect Bayesian Equilibrium:

The Conservative Politician plays Undecided initially. Then, when Moderate is played, she plays Engage. When Hardline is played, she plays Withdraw.

The Liberal Politician plays Undecided with probability ${}^{3}/_{4}$, and Decided with probability ${}^{1}/_{4}$. When Moderate is played, she plays Engage. When Hardline is played, she plays Engage.

The Campaigner plays Moderate with probability ${}^{2}/_{3}$, and Hardline with probability $^1/_3$.

The Campaigner's belief is that Prob(Conservative | Undecided) = $^4/_7$

The model predicts that the campaigner must choose moderate with probability 2/3 in order for the politician to be indifferent between Undecided and Decided. Despite the increase payoff to taking a hardline stance with a liberal politician, because it is worse to take a hardline with a conservative politician and because of the worse payoffs to the politician from engaging in the hardline stance, the campaigner must now play Moderate more often than before in equilibrium ($^2/_3$ as opposed to $^1/_2$).

Analysis and Extensions

Imperfect information leads to inefficiency in campaigning. If a campaigner had full information she would take a moderate stance with a conservative candidate and a hardline stance with a liberal candidate. The game with higher stakes reveals an equilibrium whereby the moderate stances must be played more often. From the politician's perspective, in the first scenario, a liberal politician does not need to reveal their stance i.e. can always play Undecided, taking advantage of the fact that the pooling equilibrium means the signal reveals nothing and the campaigner must play Moderate. In scenario 2 she must mix, choosing Undecided with probability $^2/_3$, and with probability $^3/_4$ in scenario 3.

I have looked at how the results change given different underlying probabilities and payoffs. In the first game, a cut off-point exists where the probability of conservative and liberal are the same. When $\alpha > 0.5$, i.e. the probability of a politician being conservative is high, there is a pooling equilibrium and the signal reveals nothing, whereas when $\alpha<0.5$ the equilibrium is semi-separating. Another thing which might change the game is if neither player had a dominant strategy, a possible extension of this model.

The model assumes politicians' stances are unknown. This is reasonable to assume this in the early stages at least but not in the later stages. Furthermore, for the politician to be possibly unwilling to reveal information and engage in debate, there must be a credible threat of punishment from voters. If these conversations happen behind closed doors, the incentives are wholly different and a reputation-based model of political accountability (see Besley and Case, 1995) would not hold. Another assumption is that politicians reveal must their stance after saying they are decided, which may not hold. A cheap talk game could be used to extend this analysis. Finally, the analysis assumes campaigners are willing to take a moderate stance. Given the principled nature of the issue, campaigners may not be willing to act strategically, and must hope that succeeds in winning the middle-ground to their cause.

Reference List:

1. Besley, T. and Case, A., 1995. Does electoral accountability affect economic policy choices? Evidence from gubernatorial term limits. The Quarterly Journal of Economics, 110(3), pp.769-798.
2. Irish Times 2017a: https://www.irishtimes.com/news/politics/how-the-eighth-amendment-committee-voted-1.3326580. [Accessed 22/12/2017].
3. Irish Times 2017b: https://www.irishtimes.com/news/politics/abortion-referendum-wording-should-ensure-it-passes-1.3237637 [Accessed 22/12/2017].
4. Irish Times 2017c: https://www.irishtimes.com/news/politics/large-majority-favours-changing-constitution-on-abortion-1.3320833 [Accessed 22/12/2017].
5. Irish Times 2017d: https://www.irishtimes.com/news/politics/oireachtas-committee-on-eighth-amendment-publishes-40-page-report-1.3333670 [Accessed 22/12/2017].
6. Osborne, M.J., 2004. An introduction to game theory (Vol. 3, No. 3). New York: Oxford university press.
7. Shepsle, K.A. and Bonchek, M.S., 1997. Analyzing Politics: Rationality. Behavior, and Institutions, New York, pp.166-196.

Appendix

Scenario 1: Prob(conservative $\pi=\frac{1(\frac{2}{5})}{1(\frac{2}{5})+k(\frac{3}{5})}$ **ob(liberal)=0.4**

We start with the parts of the ga n be easily solved using backward induction. At the lower nodes the $\pi=\frac{2}{2+3k}$ ve Politician chooses Engage when moderate is played, withdraw when Hardline is played and. The liberal type chooses Engage when Moderate is $\frac{2}{2+3k} < \frac{1}{2}$ l Engage when Hardline is played. We can move these payoffs up. The on the information set.

The Campaigner prefers a hardline stance when the expected utility to this is greater than moderate, given his/her beliefs of where he/she is in the game.

$$EU_c(\text{Hardline}|\pi) > EU_c(\text{Moderate}|\pi)$$
$$EU_c(\text{Hardline}|\pi) = \pi(-1) + (1-\pi)(4) = 4-5\pi$$
$$EU_c(\text{Moderate}|\pi) = \pi(1) + (1-\pi)(2) = 2-\pi$$

Campaigner prefers Hardline if:

$$4-5\pi > 2-\pi$$
$$2 > 4\pi$$
$$\pi < {}^{1}/_{2}$$

- If $\pi < ½$ Campaigner plays Hardline.
- If $\pi > ½$ Campaigner plays Moderate.

- If $\pi = \frac{1}{2}$ Campaigner is indifferent between playing Hardline and Moderate. However, the Campaigner's belief about which information set he/she is at must be consistent with the Politician's strategy and Bayes' Rule. Therefore, we consider the probability of the conservative type choosing Undecided. Let k represent this.

π = Prob(Politician is Conservative | Undecided)

$$= \frac{\text{Prob(Conservative).Prob(Conservative)}}{\text{Prob(Conservative).Prob(Conservative)+Prob(Liberal).Prob(Liberal)}}$$

$$\pi = \frac{1(\frac{3}{5})}{1(\frac{3}{5})+k(\frac{2}{5})}$$

$$\pi = \frac{3}{3+2k}$$

For what values of k will $\pi < \frac{1}{2}$?

$$\frac{3}{3+2k} < \frac{1}{2}$$

$$6 < 3 + 2k$$

$$3 < 2k$$

$$\frac{3}{2} < k$$

However, as k is a probability it must take a value between 0 and 1, therefore cannot be greater than $^3/_2$. There is no value of k for which $\pi < \frac{1}{2}$. The only option is $\pi > {}^1/_2$.

If this is the case the campaigner plays Moderate. If this is so the liberal politician's best response is to play Undecided. This means k = 1. When this is so π equals:

$$\pi = \frac{3}{3+2(1)} = \frac{3}{5}$$

Thus, the probability of a politician being conservative given undecided was observed is the same as the probability of being conservative. No information is revealed by the signal as the liberal politician always chooses undecided. The posterior beliefs (after witnessing the signal) are equal to the prior beliefs (before witnessing the signal).

Perfect Bayesian Equilibrium:

Liberal Politician: (Undecided, Engage, Engage)
Conservative Politician: (Undecided, Engage, Withdraw)
Campaigner: (Moderate)
Beliefs: Prob(conservative | Undecided) = $^3/_5$

Scenario 2: Prob(conservative)= 0.4, Prob(liberal)=0.6

We start with the parts of the game that can be easily solved using backward induction. At the lower nodes the conservative Politician chooses Engage when moderate is played, withdraw when Hard-line is played and. The liberal type chooses Engage when Moderate is played and Engage when Hardline is played. We can move these payoffs up. Then we work on the information set.

The Campaigner prefers a hardline stance when the expected utility to this is greater than moderate, given his/her beliefs of where he/she is in the game.

$$EU_c(\text{Hardline}\,|\,\pi) > EU_c(\text{Moderate}\,|\,\pi)$$
$$EU_c(\text{Hardline}\,|\,\pi) = \pi(-1) + (1-\pi)(4) = 4-5\pi$$
$$EU_c(\text{Moderate}\,|\,\pi) = \pi(1) + (1-\pi)(2) = 2-\pi$$

Campaigner prefers Hardline if

$$4 - 5\pi > 2-\pi$$
$$2 > 4\pi$$
$$\pi < {}^{1}/_{2}$$

- If $\pi < ½$ Campaigner plays Hardline
- If $\pi > ½$ Campaigner plays Moderate
- If $\pi = ½$ Campaigner is indifferent between playing Hardline and Moderate.

Now, k is:

$$\pi = \frac{1\left(\frac{2}{5}\right)}{1\left(\frac{2}{5}\right)+k\left(\frac{3}{5}\right)}$$

$$\pi = \frac{2}{2+3k}$$

For what values of k is $\pi < ½$?

$$\frac{2}{2+3k} < ½$$
$$4 < 2 + 3k$$
$$2 < 3k$$
$$k > {}^{2}/_{3}$$

Case 1: k > $^{2}/_{3}$, π < ½.

If $\pi < ½$, Campaigner plays Hardline. The liberal politician's best response is to play Decided, so therefore, k =0. However as k > $^{2}/_{3}$ this contradicts itself and cannot be an equilibrium.

Case 2: k < $^{2}/_{3}$, π > ½.

If $\pi > ½$, the Campaigner plays Moderate. The liberal politician's best response is to play Undecided. This means k=1. However as k < $^{2}/_{3}$ this contradicts itself and cannot be an equilibrium.

Case 3: k =$^{2}/_{3}$, π = ½.

If $\pi = ½$, the campaigner is indifferent between playing a moderate and hardline stance. This happens when the probability of a liberal politician playing undecided equals $^2/_3$. This is sufficiently high to make the hardline stance not necessarily bad and merit indifference.

We need to find the strategy of the campaigner that makes the politician indifferent between choosing decided and undecided.

The liberal politician mixes if

$$EU_{Pliberal}\text{ (Undecided)} = EUPLiberal\text{ (Decided)}$$
$$EU_{Pliberal}\text{(Undecided)} = \delta(4) + (1-\delta)(2) = 2\delta + 2$$
$$EU_{PLiberal}\text{(Decided)} = 3$$

$$2\delta + 2 = 3$$
$$2\delta=1$$
$$\delta = ½$$

When the campaigner is equally likely to choose a moderate and a hardline stance, the liberal politician chooses Undecided with probability $^2/_3$, and Decided with Probability $^2/_3$. This a semi-separating equilibrium.

- Conservative Politician: (Undecided, Engage, Withdraw)
- Liberal Politician: (Undecided w.p. $^2/_3$ Decided w.p. $^1/_3$, Engage, Engage)
- Campaigner: (Moderate w.p. ½, Hardline w.p. ½)
- Beliefs: Prob (Conservative | Undecided) = ½

Scenario 3: Prob(Conservative)=0.5, Prob(Liberal)=0.5 with new payoffs.

The stakes are now higher as it is seen to be a tight campaign. In convincing those who remain on the fence, it now becomes even more critical not to take a hardline with a conservative politician who may be won over, but it becomes even more important to take a hardline stance with any liberal politician to forward the repeal agenda. The payoff for the campaigner given:

$$EU_c(\text{Hardline}\,|\,\pi) > EUc(\text{Moderate}\,|\,\pi)$$
$$EU_c(\text{Hardline}\,|\,\pi) = \pi(-2) + (1-\pi)(6) = 6 - 8\pi$$
$$EU_c(\text{Moderate}\,|\,\pi) = \pi(1) + (1-\pi)(2) = 2 - \pi$$

Campaigner prefers Hardline if:

$$6 - 8\pi > 2 - \pi$$
$$4 > 7\pi$$
$$\pi < {}^4/_7$$

- If $\pi < {}^4/_7$ Campaigner plays Hardline
- If $\pi > {}^4/_7$ Campaigner plays Moderate.

- If $\pi = {}^4/_7$ Campaigner is indifferent between playing Hardline and Moderate.

$$\pi = \text{Prob(Politician is Conservative | Undecided)}$$

$$= \frac{\text{Prob(Conservaive).Prob(Conservative)}}{\text{Prob(Conservaive).Prob(Conservative)+Prob(Liberal).Prob(Liberal)}}$$

$$= \frac{1(\frac{1}{2})}{1(\frac{1}{2})+k(\frac{1}{2})}$$

$$\pi = \frac{1}{1+k}$$

For what value of k is $\pi < {}^4/_7$?

$$\frac{1}{1+k} < \frac{4}{7}$$

$$7 < 4 + 4k$$

$$3<4k$$

$$3/4 < k$$

Case 1: $k>{}^3/_4, \pi < {}^4/_7$

If $\pi < {}^4/_7$, then the campaigner plays Hardline. If this is so the best response of the liberal politician is Decided. This means k is 0, which contradicts the above so this cannot be an equilibrium.

Case 2: $k<{}^3/_4, \pi > {}^4/_7$

If $\pi > {}^4/_7$, the campaigner plays Moderate. If this is so the best response of the liberal politician is Undecided. This means k=1, which contradicts the above so this cannot be an equilibrium.

Case 3: $k={}^3/_4, \pi = {}^4/_7$

If $\pi = {}^4/_7$, the campaigner is indifferent between playing hardline and moderate. We need to find the strategy of the campaigner that makes the politician indifferent between choosing decided and undecided.

The liberal politician mixes if

$$EU_{Pliberal}(\text{Undecided}) = EU_{PLiberal}(\text{Decided})$$

$$EU_{Pliberal}(\text{Undecided}) = \delta(4) + (1-\delta)(1) = 3\delta + 1$$

$$EU_{PLiberal}(\text{Decided}) = 3$$

$$3\delta + 1 = 3$$

$$3\delta=2$$

$$\delta = {}^2/_3$$

When the campaigner plays moderate with probability ${}^2/_3$ and hardline with probability ${}^1/_3$ the liberal politician is indifferent between playing decided and undecided. They will play Undecided with probability ¾ and Decided with probability ¼. This is a semi-separating equilibrium.

Perfect Bayesian Equilibrium:

- Conservative Politician:(Undecided, Engage, Withdraw)
- Liberal Politician:(Undecided with probability ¾, Decided with probability ¼, Engage, Engage)
- Campaigner:(Moderate with probability $^{2}/_{3}$, Hardline with probability $^{1}/_{3}$
- Beliefs: Prob(Conservative|Undecided) = $^{4}/_{7}$