Jessie Jumpshot

Creating Value with Contingent Contracts

BATNAS and Reservation Prices

- Jessie must get a TOTAL DEAL in expected monetary value at or in excess of alternative deal worth $2.1 M
  - Salary
  - Merchandising
  - Bonus
- Sharks must pay in expected value no more than $3.0 M .

Jessie Gets $2.5M Salary

- Jessie's net gain 0.95 x $400K = **$380K**

- Sharks' net gain = **$500K**

Issues

- Jessie's Salary $\equiv$ **S** in 10^6 or M dollars

- Bonus to Jessie $\equiv$ **B** in 10^6 or M dollars

- Jessie's fraction of Merchandising Profits (in 10^6 dollars) if the Sharks win the title:
  - Either a **fixed fraction X** or….

Contingent Contract Variables
Y,Z

- Jessie and the Sharks can agree that:
  - The Sharks will pay Jessie a fraction **Y** of merchandising profits if they win the title

  - If they do not, Jesse gets a fraction **Z** merchandising profits)

Bonus

- Bonus can be treated in a similar fashion:
  - Jessie gets $\mathbf{B}^+$ if they win the championship, $\mathbf{B}^-$ if they do not with $\mathbf{B}^+ > \mathbf{B}^-$.

Constraints

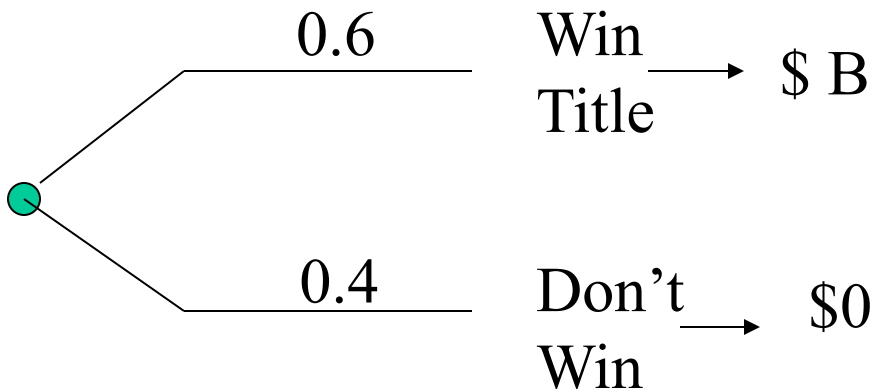
- The Sharks will pay ***at most $10 M*** *in bonus:*

$$\mathbf{0 \le B^{+} \le 10.0}$$

- The fractions Y and Z may be different but both **lie between 0 and 1.0:**

$$\mathbf{0 \le Y, Z \le 1.0}$$

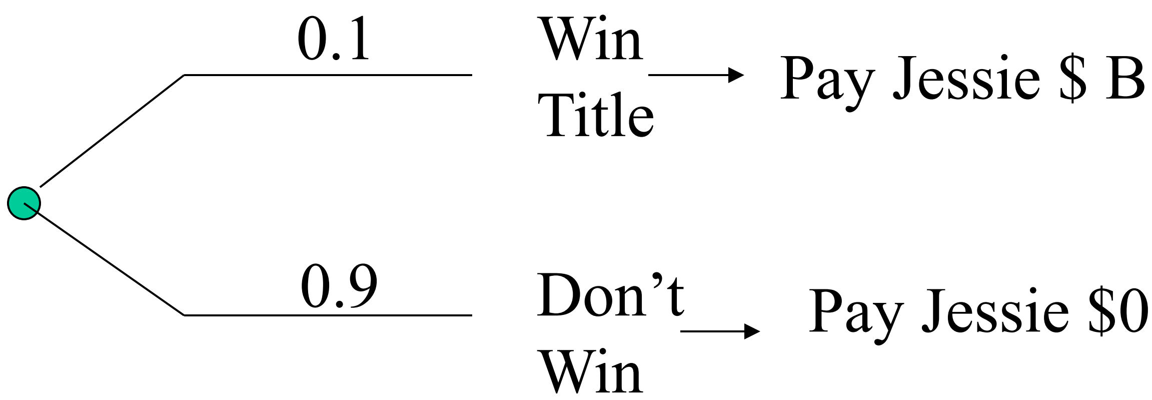
Jessie's View of Bonus => B^+ = B and B^- = 0



Expected Value of this contract is:

$(0.6 \times \$B) + (0.4 \times \$0) = \mathbf{0.6 \times \$B}$

Shark's View of Bonus



Expected Cost of this contract is:

$(0.1 \times \$B) + (0.4 \times \$0) = \mathbf{0.1 \times \$B}$

Exploiting Differences in Probabilities

- Each added BONUS dollar that the Sharks pay Jessie is worth 60 cents in expected value to Jessie at an expected cost of 10 cents to the Sharks

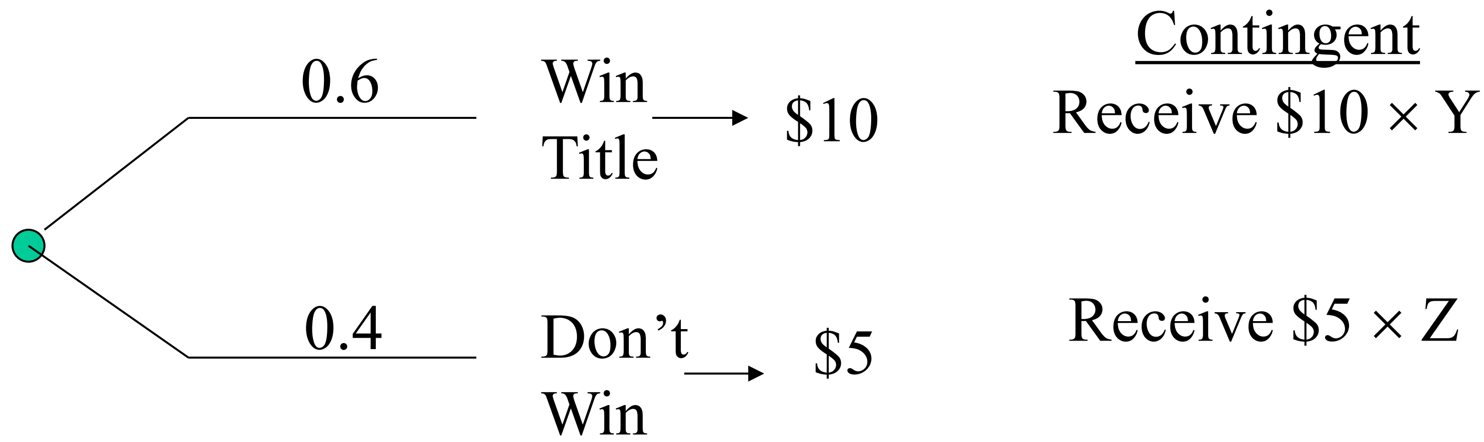
- **Differences in probabilities leverage is 6 to 1!**
  - **Compare this to salary's leverage of 0.95 to 1**

- **Big opportunity to create value for both Jessie and the Sharks**

Bonus

- In principle, the Sharks could pay a maximum bonus to Jessie if they win the title:
  - at an expected cost to the Sharks of $1 M
  - For expected revenue to Jessie of $ 6 M
- Under what circumstances might the Sharks do this?

Jessie's View of Merchandising Profits

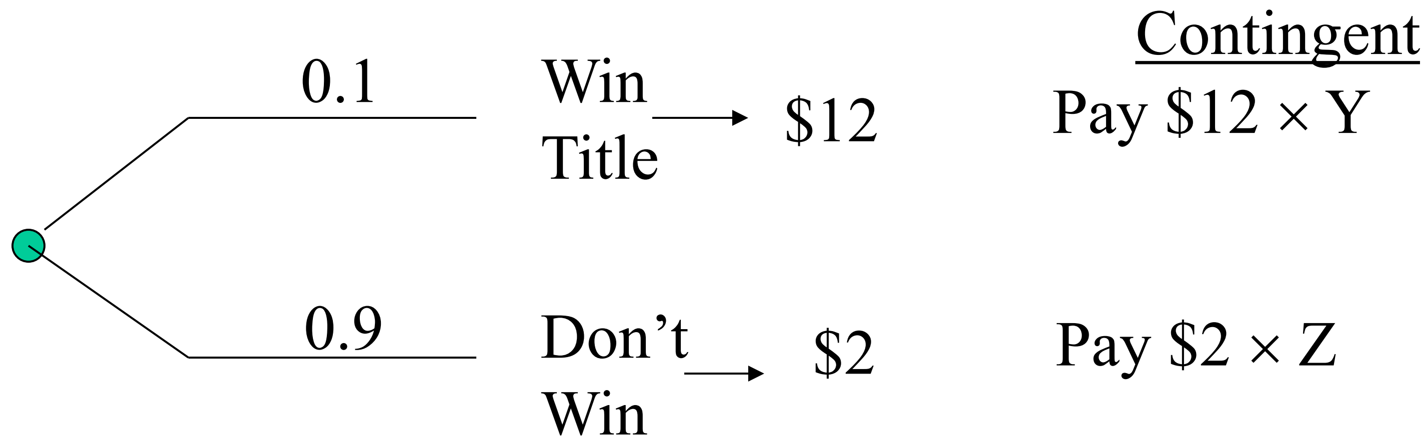


- Jessie's Expected Value of this contract is:

$(0.6 \times \$10 \times Y) + (0.4 \times \$5 \times Z) = \mathbf{(\$6 \times Y) + (\$2 \times Z)}$

- IF $Y = Z = X$, the expected value is $= \mathbf{\$8.0 \times X}$

Shark's View of Merchandising Profits



- The Shark's Expected Cost of this contract is:

$$(0.1 \times \$12 \times Y) + (0.9 \times \$2 \times Z)$$

$$\mathbf{= (\$1.2 \times Y) + (\$1.8 \times Z)}$$

- IF Y = Z = X, the expected value is **$3.0 × X**

Tradeoff Structure

- Jessie must get

  $\mathbf{0.60B + 6.0Y + 2.0Z + 0.95S \geq 2.1}$

- Sharks will pay

  $\mathbf{0.10B + 1.2Y + 1.8Z + S \leq 3.0}$

Best to Jessie

Maximize

$$\mathbf{0.60B + 6.0Y + 2.0Z + 0.95S}$$

Subject to:

$$\mathbf{B \le 10.0 \qquad 0 \le Y, Z \le 1.0}$$

And cost to Sharks is exactly \$3.0 M:

$$\mathbf{0.10B + 1.2Y + 1.8Z + S = 3.0}$$

Best for Sharks

- Minimize

$$\mathbf{0.10B + 1.2Y + 1.8Z + S}$$

Subject to:

$$\mathbf{B \leq 10.0 \qquad 0 \leq Y, Z \leq 1.0}$$

and Expected Revenue to Jessie is exactly **$2.1M** :

$$\mathbf{0.60B + 6.0Y + 2.0Z + 0.95S = 2.1}$$

No Salary!

Efficient Frontier with No Salary Paid to Jessie

DEALING OFF THE TOP!

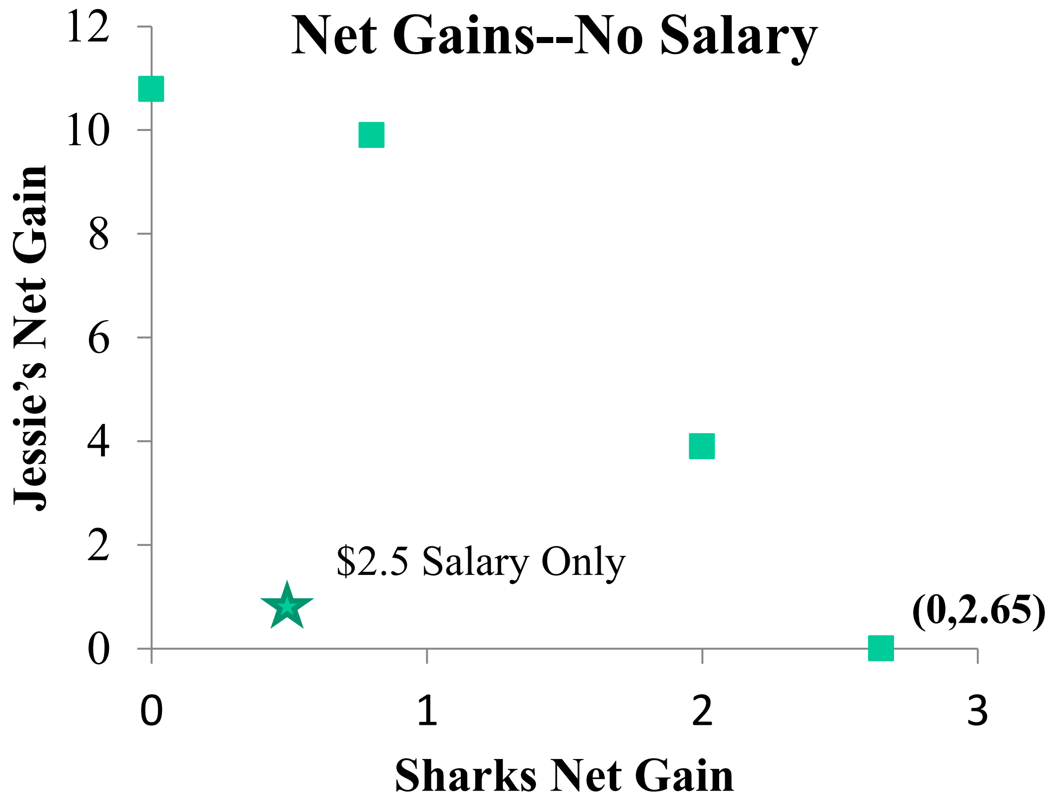
- Start with a the best deal possible for the Sharks
- Look first for the issue where Jessie gets the most value in return for the Sharks incurring the least cost
  - Allocate as much as possible to Jessie while respecting constraints

Ratios

- **Bonus:** Jessie gets **$6 for each $1** paid by the Sharks
- **Merchandising**: if the Sharks win the title, Jessie gets **$6 for each $1.2** paid by the Sharks
- **Merchandising**: if the Sharks don’t win the title Jessie gets **$2 for each $1.8** paid by the Sharks
- **Salary:** Jessie gets **$0.95 for each $1** the Sharks pay in salary

Overall Best for Sharks

- **Exploit 6 to 1 leverage on Bonus first:**
  - Jessie gets **\$3.5 M in Bonus** for Expected Revenue of $0.60 \times \$3.5M =$ **\$2.1M**
  - **Jessie's Net Gain = \$2.1M -\$2.1M=\$0**
  - Sharks **Expected Cost** $0.10 \times \$\ 3.5\ M =$ **\$350K**
  - **Shark's Net Gain =** \$3.0M -\$350K = **\$2.65 M**
  - **The agent gets nothing!**


Net Gains--No Salary
Jessie's Net Gain
Sharks Net Gain
12
10
8
6
4
2
0
0
1
2
3
$2.5 Salary Only
(0,2.65)

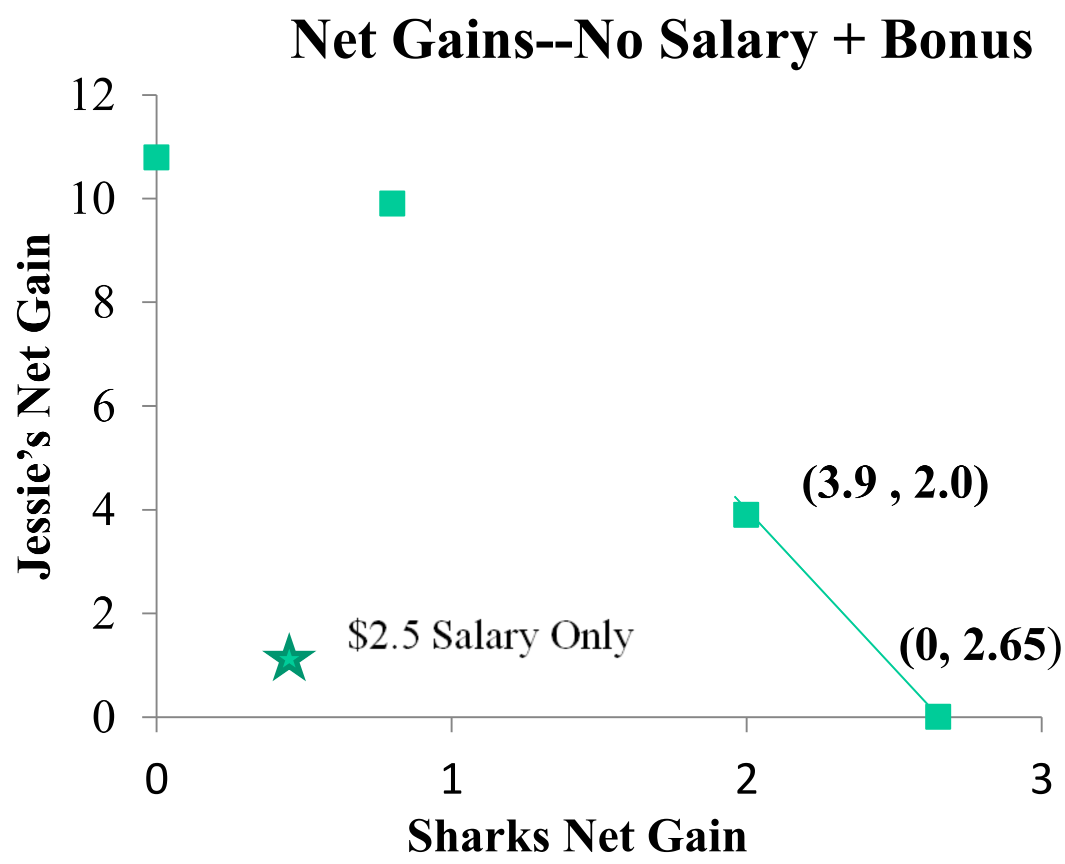
Dealing Off the Top

- **Exploit 6 to 1 leverage on Bonus**
  - **Give Jessie the max bonus subject to constraints**

  - Jessie gets **$10 in Bonus** for Expected Revenue of $0.60 \times \$10M =$ **$6**
  - **Jessie's Net Gain = $6 -$2.1=$3.9**

  - **Shark's Expected Cost** is $0.10 \times \$10 =$ **$1**
  - **Shark's Net Gain =** $3 -$1 = **$2.00**

  - **The agent gets nothing!**

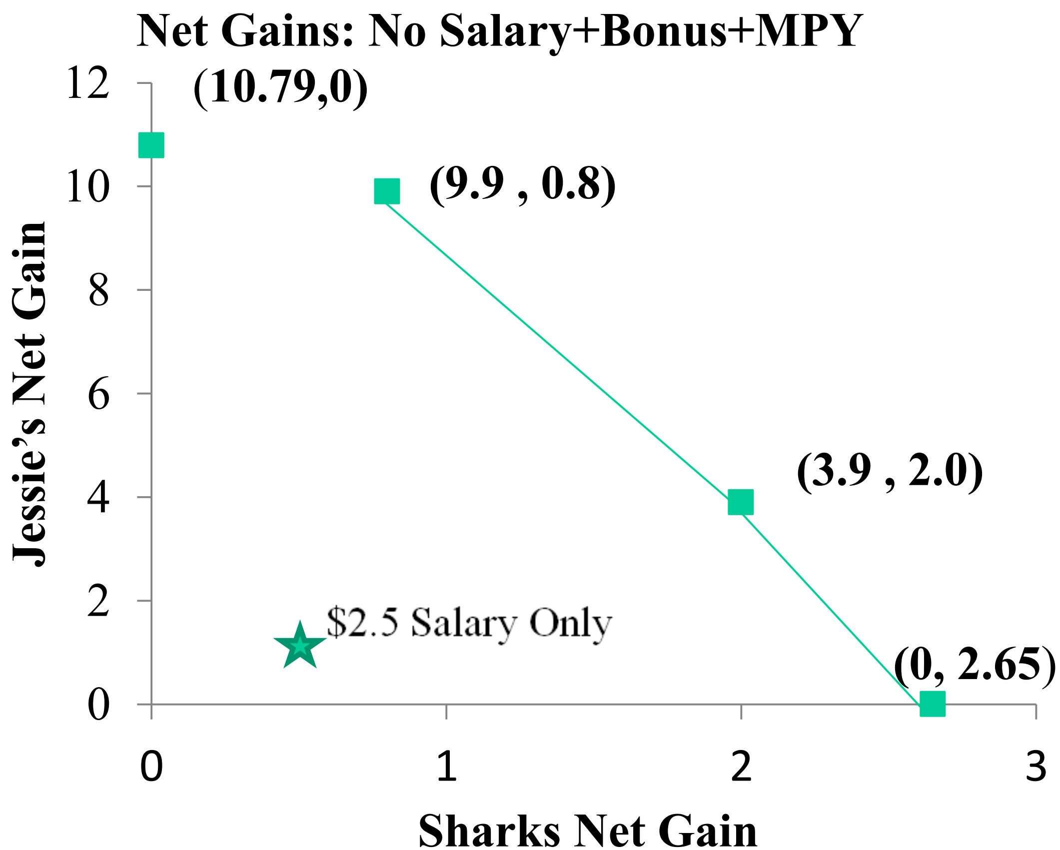

Net Gains--No Salary + Bonus
Jessie's Net Gain
Sharks Net Gain
12
10
8
6
4
2
0
0
1
2
3
(3.9 , 2.0)
$2.5 Salary Only
(0, 2.65)

Dealing Off the Top

- **Exploit 6 to 1.2 leverage on Merchandising Profits if They Win the Title:**
  - **Give Jessie the max subject to constraints**
  - Set Y= 1.0. Jessie gets 0.60 × $10 = **$6**
  - **Jessie's Net Gain = $6 + $6 -$2.1=$9.9**

  - Sharks **Expected Cost** is 0.10 × $12 = **$1.2**
  - **Shark's Net Gain =** $3 - $1 - $1.2 = **$0.80**

  - **The agent gets nothing!**


Net Gains: No Salary+Bonus+MPY
(10.79,0)
(9.9 , 0.8)
(3.9 , 2.0)
(0, 2.65)
$2.5 Salary Only
Jessie's Net Gain
Sharks Net Gain
12
10
8
6
4
2
0
0
1
2
3

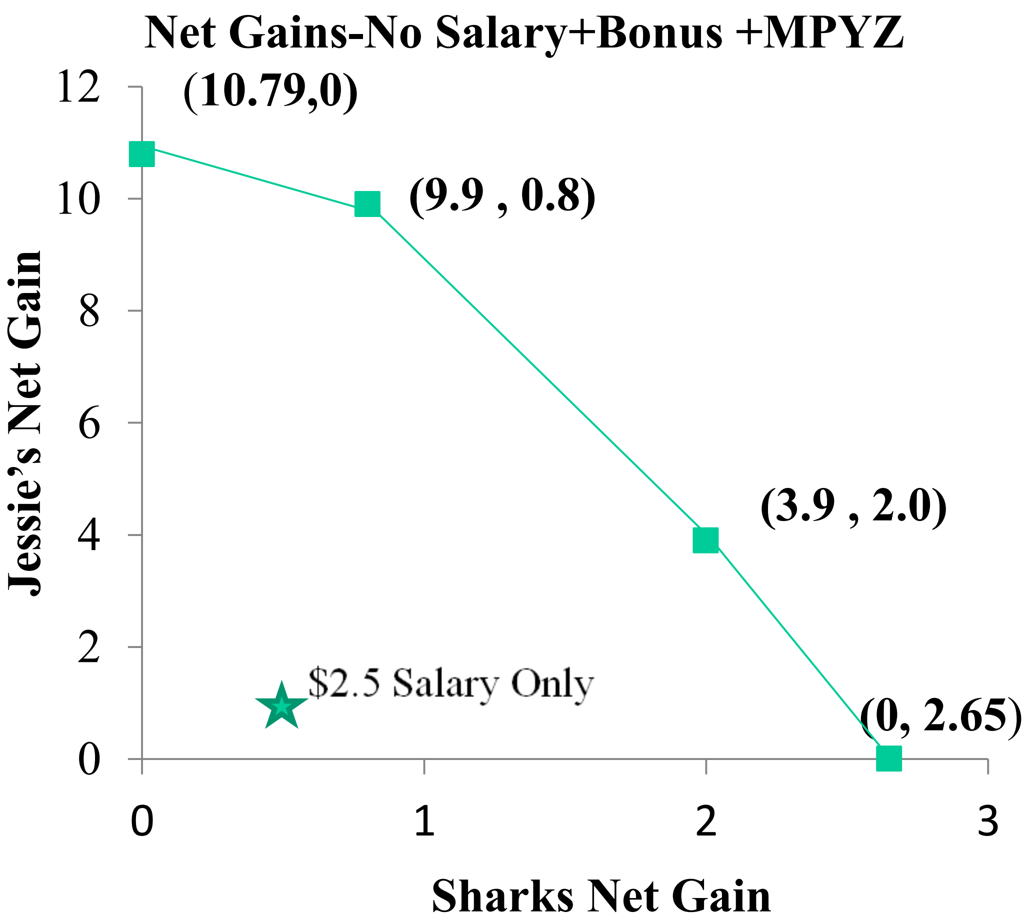
Dealing Off the Top

- **Exploit 2 to 1.8 leverage on Merchandising Profits if They Don't win the Title:**
  - **Give Jessie the max subject to constraints**
  - Set **Z= 0.444**. Jessie gets Expected Revenue increment

    0.444 × 0.40 x $5M **= $0.888**

    Jessie's Expected Revenue =$6+$6+$0.888 **=$12.888**
  - **Jessie's Net Gain = $12.888 -$2.1=$10.79**
  - Sharks **MP Cost** is 0.444 x 0.9 × $2 = **$0.80**
  - **Shark's Net Gain =** $3 - $1 - $1.2 - $0.80 = **$0**

  - **The agent gets nothing!**


Net Gains-No Salary+Bonus +MPYZ
(10.79,0)
(9.9 , 0.8)
(3.9 , 2.0)
(0, 2.65)
$2.5 Salary Only
Jessie's Net Gain
Sharks Net Gain
0
2
4
6
8
10
12
0
1
2
3

Jessie Get $1M Salary

Agent gets $50K

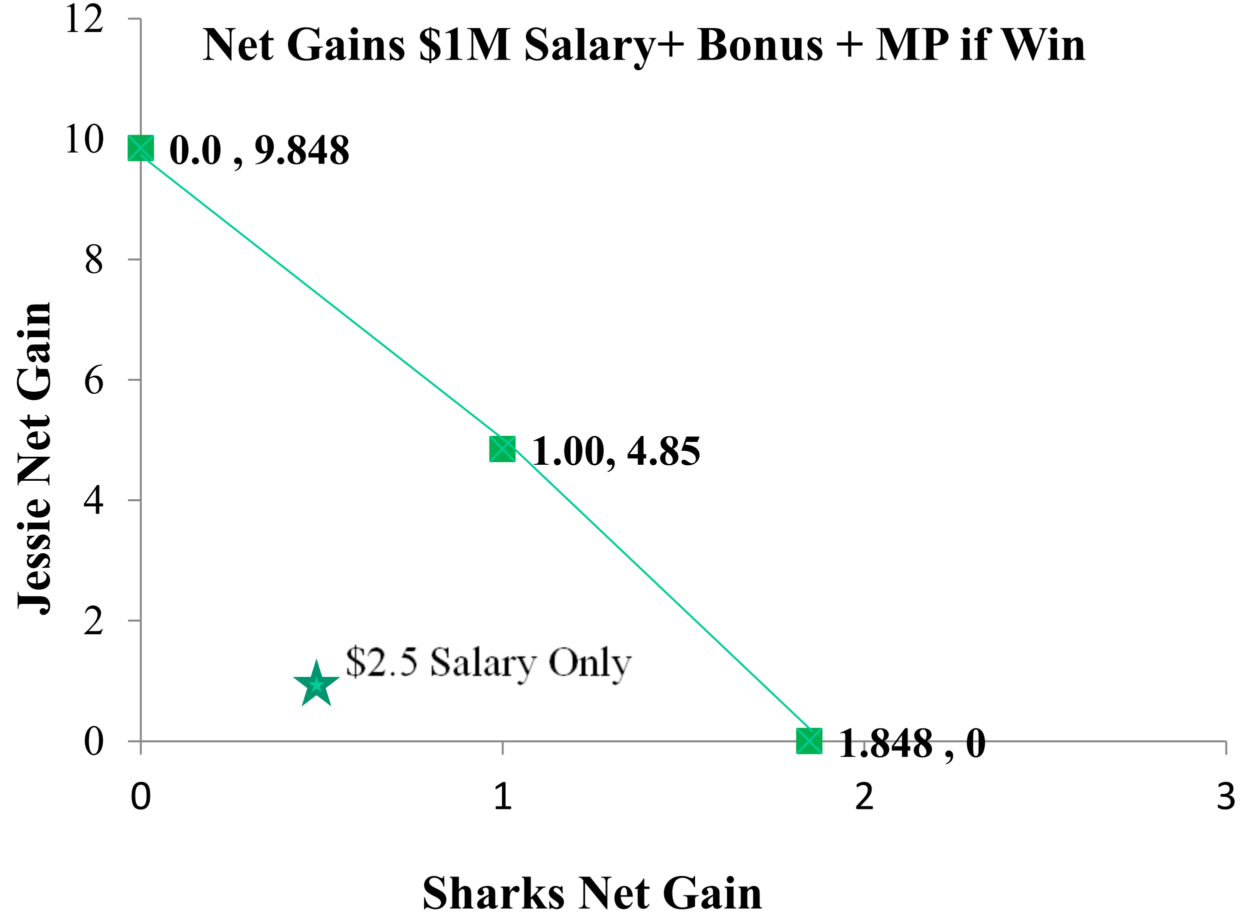
Shark's Best if \$1M Salary

- **Min** Expected Revenue to Jessie is \$2.1 :
  - Agent now takes 5% or \$ 50K
  - **Sharks must give her \$1.15 more to ensure Jessie net gain of \$0**
- The Sharks minimize expected cost by choosing **B** = \$1.15/0.60 = \$**1.92**
- **Expected Cost to Sharks**:

  \$1 + (0.10 × \$1.92) = **\$1.192**
- **Sharks Net Gain = \$1.808**

Dealing Off the Top

- Increase Bonus from \$1.92M to \$10M:
  - Jessie's net gain increases by 0.60 x 8.08M = \$4.85M to **\$4.85M**
  - Shark's net gain decreases by 0.10 x \$8.08M =\$808K to **\$1M**
- Increase Merchandising Share Y:
  - Max that Shark's will pay is 0.10 x \$12M x Y = \$1M or Y = 0.833
  - Reduces Shark's net gain to **\$0.**
  - Yields Jessie 0.60 x 0.833 x \$10 = \$4.998M
  - Jessie's net gain is **\$9.848**


Net Gains $1M Salary+ Bonus + MP if Win
Jessie Net Gain
Sharks Net Gain
0.0 , 9.848
1.00, 4.85
1.848 , 0
$2.5 Salary Only
12
10
8
6
4
2
0
0
1
2
3

Best for Sharks

- Minimize

$$\mathbf{0.10B + 1.2Y + 1.8Z + S}$$

Subject to:

$$\mathbf{B \le 10.0 \qquad 0 \le Y, Z \le 1.0}$$

and Expected Revenue to Jessie is exactly **$2.1M** :

$$\mathbf{0.60B + 6.0Y + 2.0Z + 0.95S = 2.1}$$

Jessie Gets $2M in Salary

Agent gets $100K

Shark's Best if $2M Salary

- **Min** Expected Revenue to Jessie is $2.1 :
  - Agent takes 5% or $100K Jessie gets $1.9
  - **Sharks must give her $0.200 more to ensure Jessie net gain of $0**
- The Sharks minimize expected cost by choosing **B** = $0.20/0.60 = **$0.333**
- **Expected Cost to Sharks**:

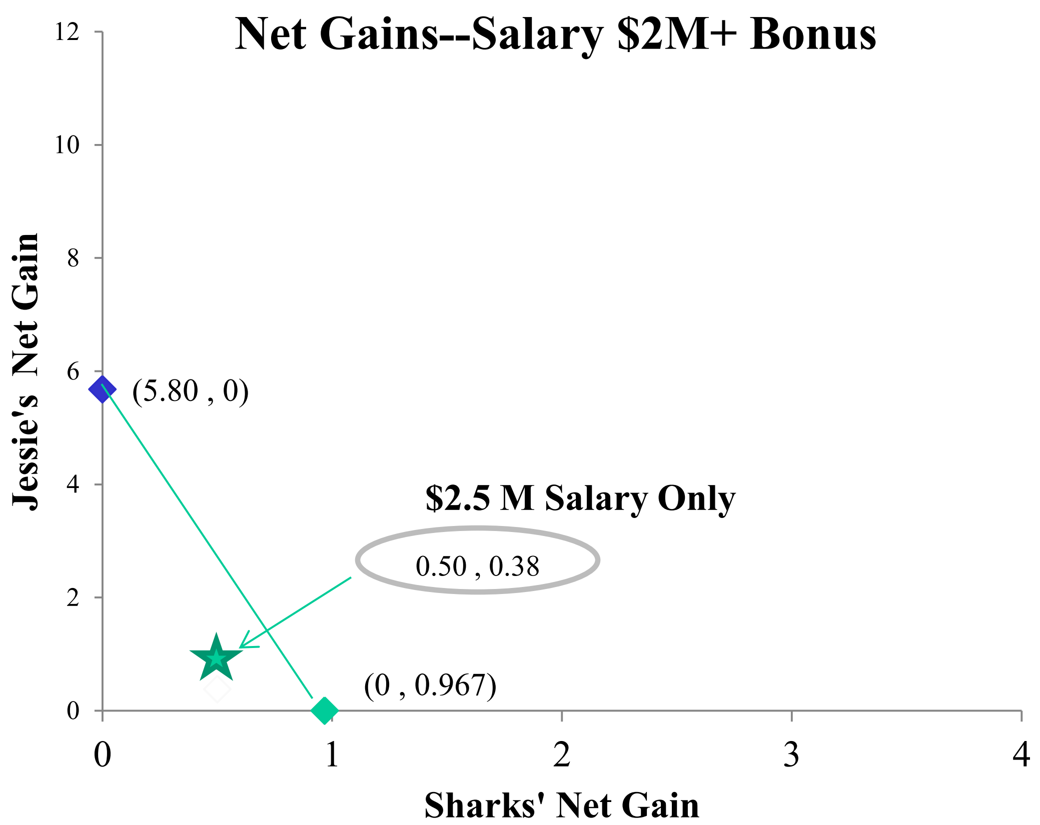
  $2 Salary +(0.10 × $0.333) = **$2.033**
- **Sharks Net Gain = $ 0.967**

Dealing Off the Top

- Increase Bonus from \$0.333 until Shark's reach \$0 net gain:
  - Shark's net gain is reduced to \$0 with bonus of B = \$10.
  - Jessie's total revenue is \$2 - \$0.100+ (0.6 x \$10) = \$7.9
  - Jessie's net gain increases from \$0 to

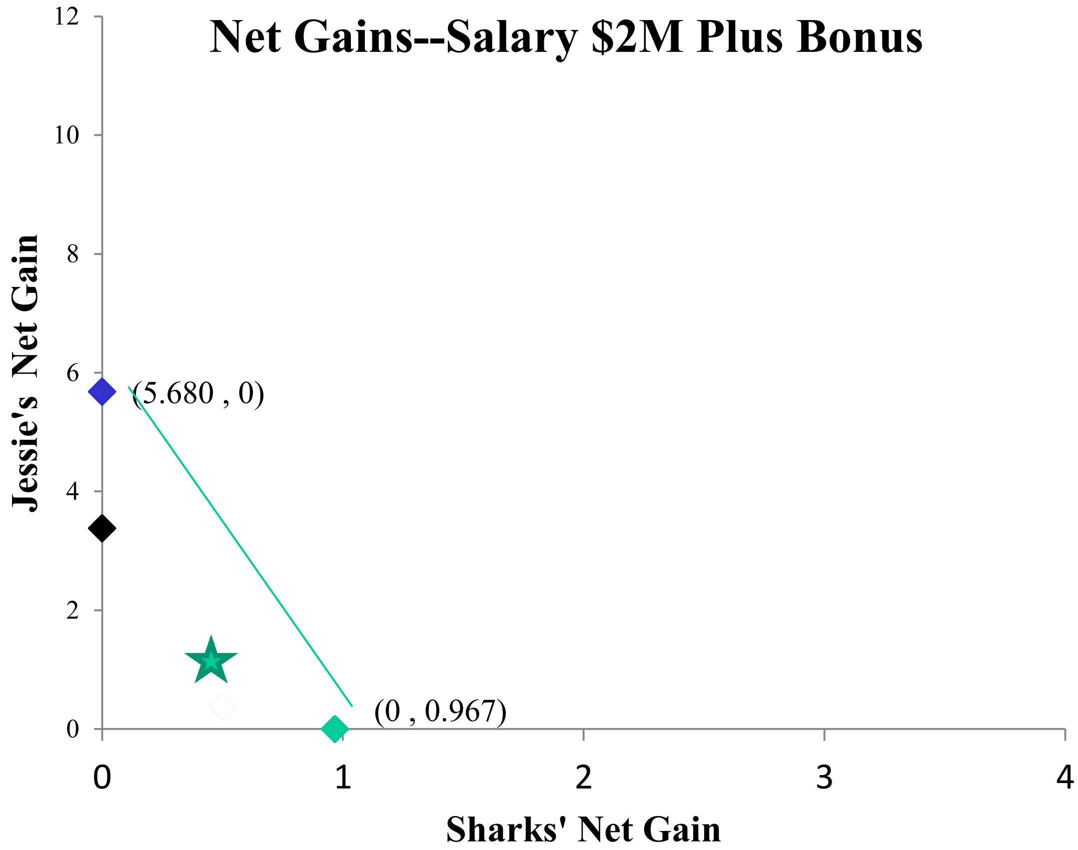
    \$7.9 - \$2.1 **= \$5.8**
  - Shark's net gain is now

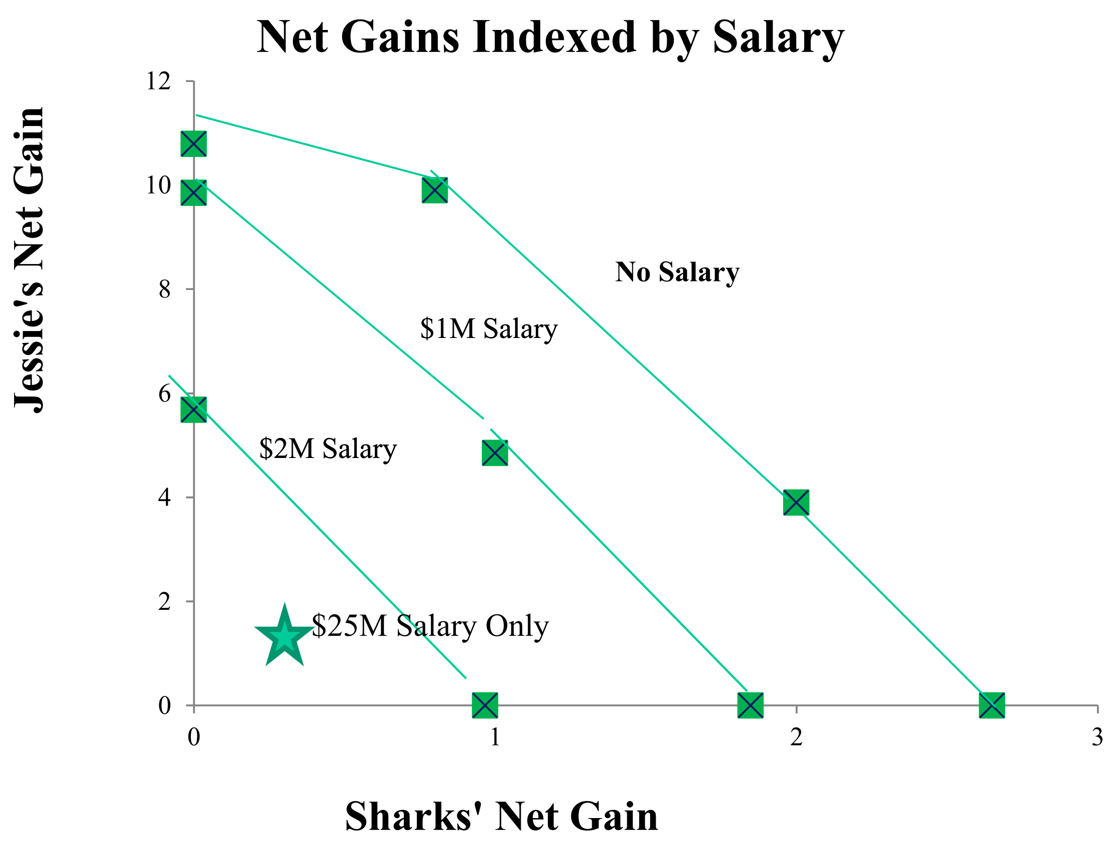
    \$3 - \$2 - \$1 = \$0


Net Gains--Salary $2M+ Bonus
Jessie's Net Gain
Sharks' Net Gain
12
10
8
6
4
2
0
0
1
2
3
4
(5.80 , 0)
$2.5 M Salary Only
0.50 , 0.38
(0 , 0.967)

Jessie Gets $2.5M Salary

- Jessie's net gain 0.95 x $400K = **$380K**
- Sharks' net gain = **$500K**
- **Large salary restricts flexibility**
  - **Best to Jessie is to give her a bonus of $0.5/.1=$5 at cost of $0.50**
  - **Creates 0.6 x $5 = $3 in value for Jessie**


Net Gains--Salary $2M Plus Bonus
12
10
8
6
4
2
0
Jessie's Net Gain
(5.680 , 0)
(0 , 0.967)
0
1
2
3
4
Sharks' Net Gain

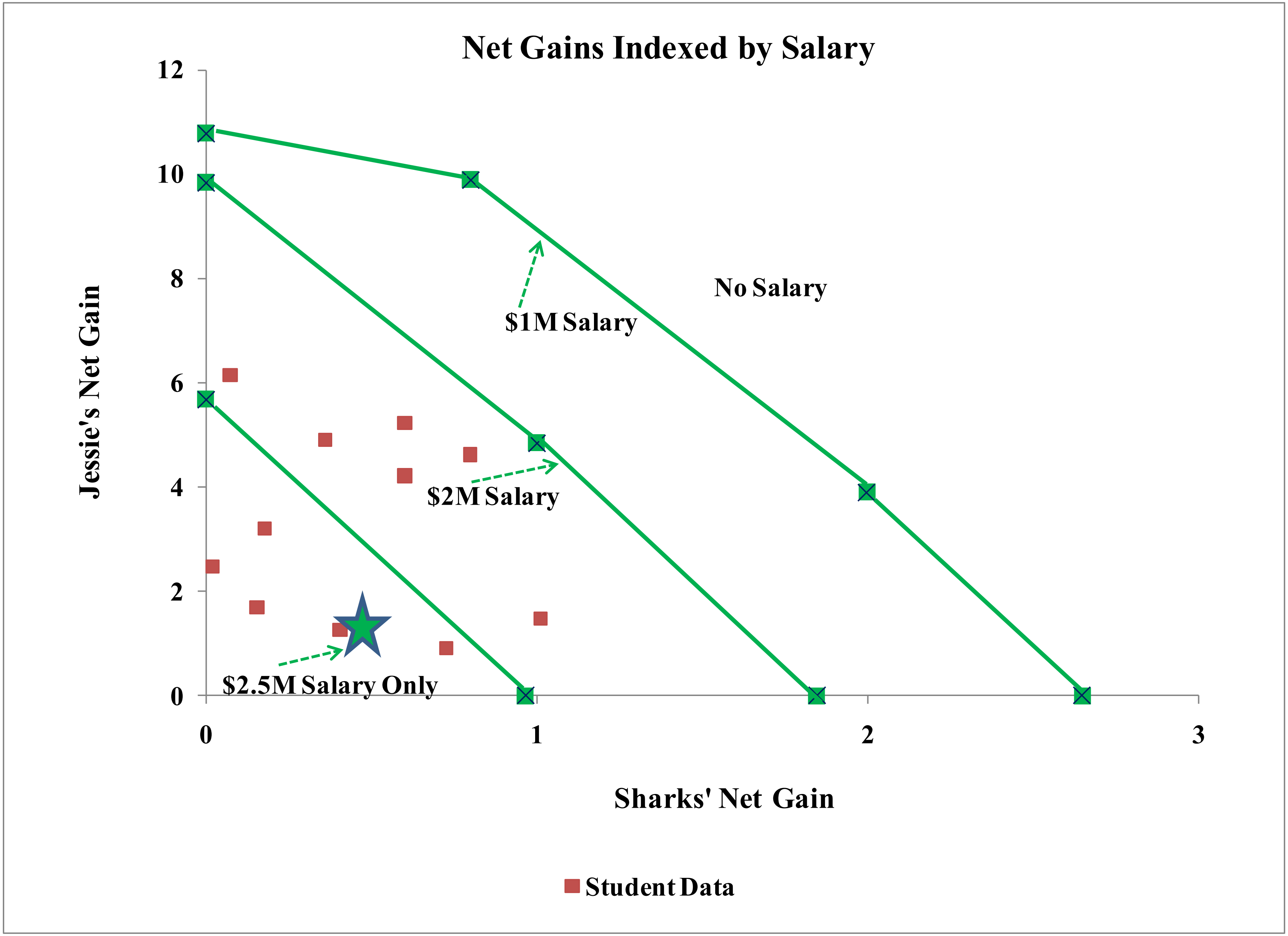


Net Gains Indexed by Salary
Jessie's Net Gain
Sharks' Net Gain
12
10
8
6
4
2
0
0
1
2
3
No Salary
$1M Salary
$2M Salary
$25M Salary Only

* **Principal-Agent issue**: The agent and Jessie are not perfectly aligned. The agent will push for as large a salary deal as possible because she only collects on salary. This is the reason that most principal-agent agreements in the sports arena say ***"Whenever derived and from whatever source".***

* The agent can use Jessie as the "final authority" in wheeling and dealing

* **Synergies:** The relative leverage of Bonus is greater than that of any other issue. This drives the deal to bonus in place of salary and squeezes out the agent.



Net Gains Indexed by Salary
Jessie's Net Gain
Sharks' Net Gain
12
10
8
6
4
2
0
0
1
2
3
No Salary
$1M Salary
$2M Salary
$2.5M Salary Only
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