ENDGAME POKER STRATEGY

◆ STRATEGY ◆

THE ICM BOOK

Game Selection

Post Flop

Bubble Play

Laddering

Final Table Deals

Dara O'Kearney

with Barry Carter

Endgame Poker Strategy

The ICM Book

Dara O'Kearney
Barry Carter

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Endgame Poker Strategy: The ICM Book

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www.dokearney.blogspot.com

www.pokermediapro.com

Dedicated to Sean Ua Cearnaigh

Assumptions

Before you get started or even buy this book, we have made a few assumptions about you as a reader. If this doesn't sound like you, perhaps the book is not for you yet. If you are a serious player and/or have read our previous books you can safely skip ahead to the next chapter.

We are assuming you are relatively experienced as a poker player and have been playing for at least six months. This book is not a 'how to play tournaments from the ground up' type of book, it is about how to adapt your existing game to the ICM influenced stage of tournaments. You have probably made a few final tables and perhaps even won a tournament or two at this stage.

We expect you to have a reasonable understanding of concepts such as hand rankings, position, short stack play, why we 'shove' at certain stack depths, why a chip leader can bully players, why the bubble is different to other stages of the tournament, staking and final table deals. You will know some of the common poker terminology such as shove, 3-bet, min raise, suited connector, defending the Big Blind, and so on.

We don't expect any sort of expertise in the subject, but you will be aware of the concept of the Independent Chip Model (ICM). You'll know that it provides some sort of guidance for how to navigate the periods of a poker tournament where real money considerations are involved like the bubble and final table.

You should have an understanding of the concept of equity as it relates to a poker hand. For example, it is well documented that most pocket pairs are close to 50/50 against two overcards, so they usually have equity of around 50%. Pocket Aces is a favourite against all hands and has more than 80% equity against most ranges.

The examples in this book will not be about how to play a specific hand in a specific spot, but instead will look at different situations and then determine what *range* of hands you would need to call, shove or fold. When

we look at whether to call an all-in we will not be looking at it from the perspective of Ace King or Pocket Jacks, but the full selection of profitable calling hands, and, by inference, the full range of hands we would not call with.

With that in mind, when we talk about a range of hands for brevity we start with the weakest part of that range that qualifies. So when we say an opponent's shoving range is:

AJs+, ATo+, KQs, 88+, A3o-A4o

That means:

AJ, AQ and AK suited
AT, AJ, AQ and AK offsuit
A3 and A4 offsuit
KQ suited
88, 99, TT, JJ, QQ, KK, AA

Are all part of that range.

We will also occasionally present poker ranges in a visual grid format, like this:

AA	AKs	AQs	AJs	ATs	75%	11%	29%	A6s	22
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J
60%	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	9
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	8
A7o	K7o	Q7o	J7o	T7o	97o	87o	93%	76s	7
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	6
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	5
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	5
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	5
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	5

In this example the pocket pairs are the diagonal line that goes from Pocket Aces on the top left to Pocket Twos on the bottom right. The hands above those in the top right half are suited hands, for example A2s is an Ace and a Two of the same suit. The bottom left section are unsuited hands, so A2o is an Ace and a Two of different suits.

The hands that are shaded are hands that are in our range, so the hands that are white are folds. The different shadings represent different actions. For example the light grey shaded hands above might be a raise to two big blinds and the darker greys might be all-in 'shoves'. If there is a percentage number instead of the hand ranking in the box that means it is a 'split' meaning some of the time we do one action and some of the time another. So in the above example 11% of the time we shove with A4s and the rest of the time we min raise.

The majority of this book has been developed with rigorous use of solver technology like Holdem Resources Calculator, ICMIZER, Range Trainer Pro, PIOSolver and Monker Solver. You do not need to use any of these tools to get the most from this book, though we do recommend looking at some ICM calculators in the future once you have finished this book.

At the end of each chapter we have key takeaways with the most important lessons. We also have important concepts which we say are things

'the pros don't know'. This is the first book specifically on ICM and these are groundbreaking things we assert that a lot of otherwise very talented players do not know. It's quite a bold claim but we do this to reiterate our central argument in this book that most people do not take ICM anywhere near as seriously as they should. If you happen to know some of the things already from these sections, well done.

Everything in the following chapters will aid you in your postflop decision making but we kept most of the book preflop for simplicity. We cover postflop play at the end of the book but not in as much detail as some of the more experienced readers among you may desire. Postflop ICM is such a dense topic it could fill a book on its own, which is why it is going to be the likely topic of one of our next book projects.

With the obvious out of the way, let's dive in….

Chapter 1: What is ICM?

The fact that you have bought this book suggests that you have at least a partial understanding of what ICM is, or, at least, you are aware of its importance.

The Independent Chip Model (ICM) is a formula used to assess your real money equity in a poker tournament. Your equity in a tournament equates to what your stack is currently worth in real money terms. It is not enough to make decisions in a tournament based on the chips in front of you, you need to know the real monetary impact of your decisions and that is what ICM shows you. A decision in a cash game has a 1:1 ratio of cash to chips, if you wager ten $1 chips you will lose $10 in money if your hand doesn't hold up. This is what we call ChipEV. In a $10 tournament calling off your last ten chips might cost you $30 in equity. That is, your stack might be worth $30 at that stage in the tournament based on the payout structure.

We use ICM to give you an approximation of the cash value of your tournament chips. Most people assume that this is only relevant for when you are on the bubble but ICM influences all areas of tournament strategy including:

- The starting hands you should play
- The sizing of your bets
- When to register for a tournament
- Whether you should rebuy
- The markup you use for staking
- How to play postflop
- Which players you should target for aggression and which ones you should avoid
- Early game decision making
- How fast you should play or if you should stall
- Who to do percentage swaps with
- When to do a final table deal and how much you should chop for
- How tight you should call on bubbles and pay jumps

We are going to go deep into ICM in this book so we won't get bogged down in the details just yet, instead let's just start with a quick overview. To show you how ICM plays a massive part in a tournament consider the following example. Let's say you are playing in a $1,000 tournament that gets 100 runners, each of whom start with 1,000 chips. At the start of the tournament each chip is worth $1.

You are fortunate enough to win the tournament and have your winner's photo taken with those 100,000 chips, but how much cash do you win? Those 100,000 chips were worth $100,000 when they were spread out among the players at the start, but you actually only pocket $25,000. Those chips that were worth $1 each are now worth $0.25 each. What happened?

The prize money was distributed to the rest of the final table in the form of payouts. In a tournament the cash value of the chips devalue after every payout. The same number of chips are in play but money has been removed from the prize pool. At any stage before the bubble the combined cash value of the chips will equal $100,000 but it will not be equally distributed between the stacks.

On the bubble, for example, one player might have 30% of the chips in play (30,000), but we know that the tournament only pays out 25% of the prize pool to the winner. If this was ChipEV their stack would be worth $30,000, but that is worth more than the first prize of $25,000. Let's say that a second player also has 30,000 chips and, on the bubble, the two got all their chips in against each other. If this was a ChipEV game they would be risking $30,000 to win $30,000, so would need 50% equity.

However, because of the payouts, their stack is not worth $30,000. We have made an extreme example to prove a point but below is a table with the final 11 players, the potential payout for each player if they maintain their position, their stack and crucially what their stack is worth in real money terms:

Seat	Potential Payout	Stack	Equity
1	**$25,000**	**30,000**	**$17,415.67**
2	$18,000	30,000	$17,415.67
3	$15,000	8,000	$10,404.29
4	$12,000	7,000	$9,743.41
5	$9,000	6,000	$9,003.63
6	$7,000	5,000	$8,163.62
7	$5,000	5,000	$8,163.62
8	$4,000	3,000	$6,025.98
9	$3,000	2,000	$4,554.70
10	$2,000	2,000	$4,554.70
11th	$0	2,000	$4,554.70

As you can see our Hero's stack is not worth anywhere near the $30,000 it would be if it were ChipEV, nor is it anywhere near the $25,000 they will win if they take down the tournament. Their stack is currently worth $17,415.67. If they took on the other 30,000 stack and won, they would not see their equity double to $34,831.34; that would be impossible because the top prize is just $25,000. Their equity would go to $21,570.34. They would risk $17,415.67 in equity to win just $4,154.67. If you were in this spot, how strong a hand would you need to risk $17k to win $4k? Would you happily get your chips in with a 50/50 coinflip? Or would you need Aces? Would Aces be strong enough?

In a tournament it is never ChipEV (except for heads-up), there is never a 1:1 ratio between chips and equity. One player will always be risking more than the other, both of you will always stand to lose more than you gain, and the remaining players in the field, even the ones not at your table, influence the action too.

If you are scratching your head at the above example, don't worry, by the end of this book you will have the tools you need so that you can intuit how significant ICM factors into every decision you make. First, a brief history of ICM.

The history of ICM

Before it was called the Independent Chip Model, ICM began life as the Malmuth-Harville Formula in 1987. It was a mathematical model used for final table deals and was based on a previous model that the creators Mason Malmuth and David Harville used in 1973 for horse racing predictions. Quite simply it is a calculation to determine how likely a player is to finish in each payout position of a tournament. The player with the most chips will finish 1st most of the time and their chances of coming 1st are exactly in proportion to the percentage of chips they have, so if they have 25% of the chips in play they will come 1st 25% of the time. After that it gets more complicated as the chances of that same player coming 2nd is based on the probability of the other players coming 1st, 3rd, 4th and so on. The potential combinations of finishing positions for the remaining players becomes an order of magnitude comparable to the number of dust particles in the universe very quickly, but for final table deals a number of simple ICM calculators using the Malmuth-Harville Formula are readily available (we use the free one at www.icmpoker.com).

It wasn't until much later that ICM was used to influence how the game is played. The earliest use of the term Independent Chip Model was found online around 2007 on the poker forums. This is when players first realised that the equity you risk does not have a 1:1 ratio as it would in a cash game, meaning that it is correct to fold more hands, play a tighter range and maximise fold equity. ICM had a natural fit in Sit & Go (SNG) tournaments and the early adopters of ICM, including those who used the first solver software based around it, were all SNG grinders. Given how complicated ICM is, a single table tournament was the best way to encompass this new zeitgeist of poker strategy. It was perhaps too complicated to be used well in multi table tournaments but games with nine players were the ideal ICM training ground.

Those of us who cut our teeth in SNGs at the start of our careers when they were a popular format online took the lessons from ICM into multi table tournaments. I started my poker career as an SNG grinder, enabling me to make the jump to satellite tournaments - the format where ICM has the most extreme implications. As you will know if you have bought our first book *Poker Satellite Strategy*, there are spots in satellites where it is correct to shove 100% of your range because your opponent should fold 100% of their

range, even Pocket Aces preflop. Satellites are an extreme format but the lessons apply to all tournaments and we have found that our first book helped people understand regular tournaments better.

Some time after the poker boom SNGs became less popular and people no longer learned ICM the way we did. There was a whole generation of MTT regulars who jumped straight into tournaments and never paid much attention to ICM. They played a ChipEV style which served them well if they were also running well. Other than realising they had to be tighter on the bubble, most people ignored ICM. In fact there was a time when ICM became a subject of derision and players who studied it were considered bad, old school, nits. A common criticism of ICM was that it was better to 'play for the win'. The prevailing wisdom seemed to suggest that attention to ICM meant you mincashed a lot, but never contested the big prizes; by the end of. By the end of this book we will dispel that myth and show that when you understand ICM you will cash more *and* win more.

In the last three or so years we have noticed that ICM is getting talked about regularly and in wider circles. Players realise that some of the wild, loose plays they have been making were 'ICM punts' that were costing them money. They are seeing that some of the best players in the world are the ones who cut their teeth in highly ICM influenced formats like satellites and the old STEPS SNGs. They are witnessing how different play is in the Super High Roller tournaments, where most of the elite players understand ICM acutely. Finally, some of the best solver technology like DTO, MonkerSolver and PIOSolver are becoming ICM aware.

It is amazing to me after more than a decade as a professional the number of my peers who have little to no understanding of ICM. A lot of my students come to me with no previous knowledge of ICM and in some cases will contact me for a last minute primer on ICM when they make the final day of a multi day tournament. A remarkable number of high profile players considered to be among the best in the world make enormous ICM errors under the guise of 'playing for the win'. Without exception, the best players that I know and the only players I will stake or do swaps with are the ones who understand ICM.

The time is right for a detailed exploration of ICM. While many of the

resources out there are fantastic to get you started on ICM, one criticism we have of the current crop of courses and solvers is that they show you what to do, but don't explain why. They will show you what hands you should fold, call and shove with in the hopes that memorisation alone will be enough. We did the same thing to a small extent in our previous two books *Poker Satellite Strategy* and *PKO Poker Strategy*, but that was because they were two niche formats and we felt the best way to explain them was to show you how vastly they differ from regular tournaments. The best way to do that was to compare how the ranges differed across formats.

In this book we are going to get down to first principles. We are not going to get heavy on the ranges you should play in different spots, instead we will be concentrating on the foundational ICM principles so you can adjust to different situations organically. ICM influences everything you do in a poker tournament, it even influences your decisions before you play your first hand, so the only way we could tackle a book with such broad implications is to bring the poker world up to speed on the fundamentals.

If that sounds daunting, do not worry. This is still a book with the amateur in mind and you do not need to purchase the latest solver technology to keep up. If you are a serious player who uses solver technology, we think this book will be the ideal companion to your study.

Before we explore why ICM is not just for nits, let's give you the quickest of primers on how it influences your play….

Chapter 2: ICM in 30 minutes

To get the most out of this book we think you should use it as an addendum to further study away from the tables in the form of hand reviews, solver simulations and coaching. This is a book you should return to several times and make plenty of notes. Most of the lessons should help you right away but some of them will require additional effort.

This will take time and you are not expected to read this book quickly, nor stop playing until it is finished. We appreciate that some of you might even have bought this book ahead of playing in a big tournament. For that reason, we begin with some immediate fixes you can make to your game around ICM that should have an immediate benefit. In this book we want you to learn the why behind the ways ICM changes your game, but until then if you are happy to trust in the following advice without further explanation, these changes should improve your winrate right away.

Losing hurts more than winning feels good

This is perhaps the philosophy of ICM that you should internalise right away. As you might have worked out in the previous chapter, because there is not a 1:1 ratio of chips to cash like there are in ChipEV cash games, you never win more than you risk in a tournament hand. You might be calling a 500 chip bet to win a 1,000 chip pot, which is a healthy return on your chips, but you might be risking $50 in tournament equity to win an extra $30.

The immediate adjustment, therefore, is to play tighter in tournaments than you would in cash games. You need to play stronger hands than you would in a cash game because you need to win more often to justify the risk.

In practice that means shaving the bottom of your range a little, especially when you are calling a bet. If your calling range in a cash game would be 44+ KJs+ ATo+ A9s+, maybe take a few pips off that range to make it 77+, KQs, AQo+, AJs+.

In particular you should dramatically tighten up your calling range near

the bubble, with at a minimum something like 88+, AQs+, AJo+ but probably something even tighter. You will not be making a massive mistake, until you have learned more about ICM, by only playing QQ+ and AKs on the literal bubble of a tournament.

You'll learn what factors widen or tighten your calling range as we progress but until then, keep it to hands you figure to be ahead most of the time.

Small pairs lose their value

A specific note on hand selection and that is that small pocket pairs that you would be happy to set mine with in a cash game go dramatically down in value in tournaments as you get nearer the money. It is not a bad idea to remove pairs below sixes entirely from your range when you are near the money and/or with shallow stacks.

This is in part because the hands you will get called by will tend to dominate them or at least be overcards. It is pretty much never a good thing to get in coinflips in the late stages of a tournament, even though they are an aspect of televised poker that is glamourised. Also, small pairs realise equity poorly, there are so many flops where you will be forced to fold because small pairs are too weak to stand much ICM pressure. If you have 55 and the flop is 9-T-K you cannot put any more money in the middle and are at best hoping to check it down.

Most of the time the stacks are shallower when ICM influences the action, so you usually won't be getting the implied odds to play small pairs anyway.

It feels weak at first to just open fold a pocket pair in a tournament but overvaluing the 'best hand right now' is a particularly dangerous leak. There are times when small pairs play well, but until we discuss them, just throw them away.

Blockers go up in value

On the flip side, you can make up for the small pair removal by adding

more hands that block big hands. You will discover that suited Aces and suited broadway hands go up in value in the late stages of a tournament.

This is because when you have an Ace in your own hand it makes it less likely your opponent has one. Because you need a tighter calling range in tournaments, you are more likely to get folds when you have an Ace in your hand because the typical calling ranges are mostly made up of AA, AK, KK, QQ, JJ hands. If you raise with 22 there are 16 potential combinations of AK and six combinations of AA out there, for example, but if you raise with A2s there are only 12 combinations of AK and three combinations of AA. You will run into a big Ax hand 30% less often in this example with A2s than you will with 22.

The same is true to a lesser extent with suited broadway hands like K9s and QTs. Think of those hands as having ½ or ¼ of a blocker. They will play better in late position, if you raise them early you will almost certainly run into Ax. We like the Ax and Kx hands to be suited because it gives us outs when we do get called and we are otherwise dominated. If you get reraised and have plenty of chips behind, just throw the hand away.

When you do get dealt a hand like A5s and you raise with it don't tell yourself you are raising because you have a strong hand, tell yourself you are raising because it is much less likely your opponents have a hand they can continue with.

Who covers whom is important

The nearer you get to the money the more significant your risk of elimination becomes in your decision making. You should always pay attention to who can bust you at your table, who is close to busting and who is somewhere in the middle.

You can play a wider range of hands against a player you can bust, because they have to play tighter against you. You can play more aggressively against a player you cover and take them off more pots. Fold equity becomes very important in the late stages of a tournament when the blinds are high, so maximise your chances of taking down pots uncontested.

If you are the player who is covered, you should play more passively and take fewer risks. Pot control your hands, avoid thin value bets and be prepared to fold in hands you would probably call in a cash game. Your opponent should be playing more aggressively against you, so a more passive style should earn you more chips overall anyway.

The bigger your stack, the more aggressive you can be. If you only have 5% more chips than your opponent then they represent almost as big a threat to you as you do to them. When you have twice as many chips as them you can take liberties. Likewise if you have a very short stack do not expect to intimidate many people, but if there is a player whom you can hurt because they are also short, they should be your target for aggression.

Play tighter as the short stack

This goes against a lot of prevailing wisdom and instincts. Many people believe that when they have a short stack they have to gamble to avoid being blinded out. That is a fallacy. As we briefly demonstrated in the previous chapter, the fewer chips you have the more each one is worth in terms of equity.

The few chips you have are worth more to you than they are to the other players, so they need protecting. It may feel counterintuitive but the shorter your stack, the tighter you should play. How tight is hard to say without further study, but for now just narrow your range as much as you can bear when you get short stacked.

If you are going to pick a player to steal from while you are the short stack, target the next shortest player. They will not want to become the short stack and they are the player you can threaten the most. While it is true that a big stack will call you with a wider range of hands you can beat, it is better to take the pots down uncontested wherever you can.

ICM is most extreme on the bubble and final table bubble

Most of you probably know that you should play much tighter on the bubble, it probably makes perfect sense; it is the last time you can bust before securing a mincash. Even amateur players who have never heard the term

ICM realise this and you will see them stalling near the bubble. You need a very strong hand to risk elimination on a tournament bubble, and you will discover in this book there are plenty of spots where Pocket Kings is a fold, and Ace King suited should be an easy fold.

However, when you have a big stack, this means you can exploit how tight people should fold by being more aggressive. If you have a very big stack you should try and extend the bubble as long as possible to pick up lots of small pots from people hanging on until the money. The flipside of having to play very tight as the short stack is that you can play very aggressively as the big stack and the bubble is where you can do that the most.

What fewer people know is that ICM is at its second most extreme on the bubble of the final table. This is because most of the money is on the final table and the pay jumps get bigger with each elimination. You should, therefore, play almost as tight just before the final table.

Although there is the most money on the final table, while ICM plays a big role it does not play as big a role as you think once you get there. In fact ICM is less extreme with every elimination. ICM is less powerful with four players left than it is with six players left, because the players have secured more money they cannot lose.

What you tend to see on the final table is players playing very tight because they have their heart set on a particular pay jump. The money for third place might represent something significant for them in their real life, but from an ICM perspective they should not be playing like it's a bubble.

The quick adjustment before we go further is that with every elimination at the final table you can play looser than the previous pay jump.

Play tighter with flat payouts or a micro/mega stack at the table

The other thing that should significantly tighten your range is when the stack sizes or payouts make it more important to lock up 2nd place than go for the win. One example of this is when the payouts are flatter, ie. 2nd, 3rd, 4th and so on get a much closer prize to 1st place than they typically would.

So a typical final table might payout the final four players like this:

1st: $2,200
2nd: $1,000
3rd: $800
4th: $600

An example of a flat final table payout structure might be more like this:

1st: $1,900
2nd: $1,100
3rd: $900
4th: $700

The same dynamic occurs when there is a runaway chip leader who has, for example, more than half the chips in play, or paradoxically, a micro stack who is going to bust next.

In all three situations, the advice is to play tighter than usual. We'll get into the reasons throughout this book but when a micro stack is almost guaranteed to hand you a pay jump it would be a disaster to bust before them. When the chip leader is almost guaranteed to win top prize, you should be looking at 2nd place prize money rather than taking big risks to catch up to him in chips. When the payouts are flatter, laddering becomes more profitable. Just take our word for it for now, you will make more money overall by tightening up in these dynamics.

Play smaller fields

You will learn the most about ICM by playing smaller field MTTs, which we define as 50-200 players online. This is because you will find yourself on bubbles and at final tables more often. The reason why SNG and MTTSNG grinders have a deeper understanding of ICM than players who specialise in huge field tournaments is more repetitive exposure to relevant spots.

We also think these tournaments are typically softer overall and much easier to handle from a mental game perspective. At an absolute minimum you should play more small field MTTs while you are learning the ropes

about ICM.

There is no ICM heads-up

When there are just two players remaining you have both secured second place prize money and you are now just competing for the 1st place prize difference. This is the only time when you can play a 100% ChipEV style because there is only one prize being contested. You will often see players overfold heads-up because they have been doing it for the entire tournament, but now is the time to take small edges if you think you are ahead in ChipEV terms.

Chapter 3: Bubble Factor

In the last chapter we stated that "losing hurts more than winning feels good" in poker tournaments. The equity that you risk when you put your chips in the middle of the table is always more than the equity you stand to gain the times you win. A whole generation of poker players knows this from looking at ICM calculators. Through pattern recognition they know when to make a tight fold or put pressure on a short stack hoping to cash.

What is missing from a lot of poker players' games is a foundational ability to make ICM savvy decisions on the fly. ICM is complex because it calculates the probability of every remaining player coming in every position and gives each one an aggregate equity based on that. In practice no human can do such calculations, so they need a shorthand way to get the next best approximation.

Thankfully, that method already exists and has for some time. It is a concept called Bubble Factor which was introduced by Lee Nelson, Steven L. Heston and Tysen Streib in their groundbreaking, and underappreciated, 2009 book *Kill Everyone*. I think because it is an old book, relatively speaking, modern poker players might have dismissed it as outdated and instead prefer to use solvers. Bubble Factor is a foundational concept in tournament poker and solvers like ICMIZER use it.

Bubble Factor is a measure of how much more losing hurts you than winning rewards you. In particular it shows you how much more profitable/costly it can be to tangle with different players at different times. If you are 2nd in chips and take on the short stack that is not much for you to worry about, if you play the same way against the overall chip leader you are going to burn money in tournaments.

My only gripe with Bubble Factor is the name. It suggests that it only applies on or near the money bubble, which is a common myth many players have about ICM in general. Bubble Factor applies to every decision you make in a tournament except for the final heads-up stage. A more appropriate name would have been Tournament Life Factor.

It is a relatively simple calculation but we implore you to study this chapter in detail, maybe doing some calculations yourself and rereading this section again. Bubble Factor influences the remainder of this book and once you develop an instinct for it, you will look at all decisions through the lens of Bubble Factor.

Bubble Factor

A foundational principle of ICM is that when we play a pot we do not win as much equity as we potentially lose. The amount we win in equity is never as much as we win in chips because of the way MTTs structure their payouts. Let's take the example of a $10 10-person SNG with 10,000 stacks and $50/$30/$20 payouts. No rake or antes in this example and we are assuming equal skill between the players.

Seat	Potential Payout	Stack	Equity
1	$50	10,000	$10
2	$30	10,000	$10
3	$20	10,000	$10
4		10,000	$10
5		10,000	$10
6		10,000	$10
7		10,000	$10
8		10,000	$10
9		10,000	$10
10		10,000	$10

No surprise here that before a hand is played, everyone has equity of $10, which is what they bought in for. But let's say that the Small Blind and Big Blind get it all-in first hand, and the Small Blind loses, what happens to the equity?

Seat	Potential Payout	Stack	Equity
1	$50	20,000	$18.44
2	$30	10,000	$10.19
3	$20	10,000	$10.19
4		10,000	$10.19
5		10,000	$10.19
6		10,000	$10.19
7		10,000	$10.19
8		10,000	$10.19
9		10,000	$10.19
10		0	$0

The player who lost has seen their equity go down from $10 to $0, because they have been eliminated. The player who won, however, has not gained $10 in equity, they have gained just $8.44 in equity, so where has the remaining $1.54 in equity gone? It has been redistributed to the rest of the table. Without risking a chip everyone else has gained $0.19 in equity because they have moved one step closer to the money.

The player who won risked $10 to win $8.44, which shows how losing hurts more than winning gains in tournaments. If this were a cash game they would have risked $10 to win $10 (what we call a ChipEV spot). The chips are worth the exact monetary value they represent. In a tournament you can never win more equity than you risk because of the payout structure. In this example if you come first you do not win $100 (10 x $10) you only win $50, the remaining $50 goes to 2nd ($30) and 3rd ($20).

Bubble Factor is a premium on the equity you need to play a hand in tournaments based on the real money equity you risk and stand to win. You divide what you potentially lose in equity by what you potentially gain, so in the example above it would be:

$$\$10/\$8.44=1.18$$

In this example your Bubble Factor is 1.18. When you have your Bubble Factor you can do this simple calculation to get the equity required to call an all-in:

Bubble Factor/(Bubble Factor + 1)

In this example that would be:

$$1.18/(1.18+1)=54\%$$

So in this toy game example if this were a cash game, the two players would need 50% equity to be breakeven against each other. However, because it is a tournament that equity goes up to 54%. This is at the very start of the tournament which shows that ICM plays a significant factor in every decision you make, not just near the payouts.

Let's fast forward to the next hand and this time our new chip leader gets it in against another player, what happens when they win?

Seat	Potential Payout	Stack	Equity
1	$50	30,000	$25.50
2	$30	10,000	$10.64
3	$20	10,000	$10.64
4		10,000	$10.64
5		10,000	$10.64
6		10,000	$10.64
7		10,000	$10.64
8		10,000	$10.64
9		0	0
10		0	0

Their equity goes up to $25.50, which is an increase of $7.06. That is both less than the $10 the Button risked and it is less than the chip leader won in the previous hand where they won $8.44. We are going to explore this in more detail in the next chapter but this is an example of your chips becoming worth less the more you have.

If our chip leader lost the hand, however, this is what the new table makeup would be:

Seat	Potential Payout	Stack	Equity
1	$50	20,000	$18.44
2	$30	10,000	$10.19
3	$20	10,000	$10.19
4		10,000	$10.19
5		10,000	$10.19
6		10,000	$10.19
7		10,000	$10.19
8		10,000	$10.19
9		10,000	$10.19
10		0	$0

Quite simply the next opponent and the chip leader would switch places. The winner would have a new equity of $18.44 and the former chip leader would have $10.19 like everyone else. In this hand the former chip leader risked $8.25 of equity ($18.44-$10.19) to win $7.06 equity.

$$\$8.25/\$7.06 = 1.17$$

Their Bubble Factor was 1.17, which would make their required equity to call:

$$1.17/(1.17+1) = 54\%$$

It's practically the same. They still have to call 4% stronger than if it was a ChipEV spot but it is still way off the money to change significantly. Let's go back and assume our chip leader actually won that hand and magically finds himself in the exact same spot with a third player shoving all-in and him calling.

If chip leader wins, this is the new equity:

Seat	Potential Payout	Stack	Equity
1	$50	40,000	$31.33
2	$30	10,000	$11.44
3	$20	10,000	$11.44
4		10,000	$11.44
5		10,000	$11.44
6		10,000	$11.44
7		10,000	$11.44
8		0	0
9		0	0
10		0	0

If the leader loses, this is what things look like:

Seat	Potential Payout	Stack	Equity
1	$50	20,000	$18.78
2	$30	20,000	$18.78
3	$20	10,000	$10.40
4		10,000	$10.40
5		10,000	$10.40
6		10,000	$10.40
7		10,000	$10.40
8		10,000	$10.40
9		0	0
10		0	0

Our chip leader gains $5.83 of equity (They started with $25.50 and it goes up to $31.33) and when it goes badly they lose $4.75 of equity.

$$\$5.83/\$4.75 = 1.08$$

Using the Bubble Factor to get the required equity again:

$$1.08/(1.08+1) = 52\%$$

The more chips we have in relation to the other players, the less Bubble Factor influences our decisions. We needed 54% equity when we risked equal stacks and now we only need 52% when we have triple the stack of our opponent.

Before moving on, there are a couple of other points worth noticing. When the two players get it all in, the equity of the other players not involved in the hand always increases (unless the pot is chopped). This is true even if the shorter stack wins so there is no elimination, in fact in this example they gain more equity when the short stack doubles up. The second point is that the nearer they get to the bubble, the more equity they gain. In the first hand, we saw their equity increase by 19 cents. When the chip leader then gets it in and eliminates a second player, it increases a further 45 cents. When they get it in a third time, it increases by a further 80 cents (if the chip leader wins) or

$1.06 (if the short stack wins). There's an important general principle here - the nearer we are to the bubble, the more we stand to gain from two other players getting all in.

Let's move this hand to the actual bubble of the tournament. Let's assume our chip leader has 40,000 chips and the other three players have 20,000 each. Two 20,000 stacks get it in against each other. This is what their equity was before the hand.

Seat	Potential Payout	Stack	Equity
1	$50	40,000	$33
2	$30	20,000	$22.33
3	$20	20,000	$22.33
4		20,000	$22.33

In this example both players are risking $22.33 of equity and after the hand this is what the table would look like:

Seat	Potential Payout	Stack	Equity
1	$50	40,000	$35.67
2	$30	40,000	$35.67
3	$20	20,000	$28.67

The winner risked $22.33 to win $13.34 extra equity ($35.67 total).

$$\$22.33/\$13.34 = 1.67$$

Looking at the Bubble factors to create equities to call, that means:

$$1.67/(1.67+1) = 63\%$$

In this example that pot odds coin flip now requires you to have a hand that is a 63% favourite. If the loser was shoving a tight opening range of the top 9% of hands the winner would have needed QQ+ to call and would have had to fold Ace King. In our first example we saw two equal stacks get it all-in and they required 54% equity to be breakeven. In this example it is once again two equal stacks getting it all-in but now they require 63% to do it, because of the fact they are one position away from the money.

These examples are simplified toy games that don't reflect how a poker game is played, we didn't even mention the blind levels. However, they demonstrate two very important takeaways you need to understand about Bubble Factor.

First of all, Bubble Factor is influenced by ICM and the payouts. The closer you are to making the money and the steepness of the payout structure determine how big the Bubble Factor is. Secondly, Bubble Factor is influenced by the relative difference between the stacks. When a short stack shoves, the chip leader, medium stack and short stack all have very different Bubble Factors governing whether they should call or fold. Not only does the difference between the two stacks in the hand influence the Bubble Factor, the stack size of other players not involved (even at different tables) plays a role too.

We are going to explore all this in further detail in this chapter, but first…

How to use Bubble Factor

Now that we have introduced the concept, let's take a step back to discuss how practical it is as a concept and how we should use it in real time at the tables. We have shown you a basic Bubble Factor calculation but we did not show you how we arrived at the cash value equities of each stack we used in the calculation. For this we used the free ICM calculator tool at www.icmizer.com and there are many alternative websites, apps and software that provide the same information.

We will provide some heuristics for working out Bubble Factor at the tables, but first and foremost we see Bubble Factor as something for you to study away from the tables. When you play, pick out some tough spots you found yourself in and punch them into a free ICM calculator, then using the equities that it shows you, work out your Bubble Factor. We are going to look at some hand examples in this chapter using the same method which we advocate you use in your self study.

It's a fool's errand to try and work out the exact equities in the moment and you will likely time out if you tried to use an ICM calculator as you play (not to mention you would potentially break the poker room's rules if you did).

You will find that once you start regularly using ICM calculators and reviewing hands in the context of Bubble Factor, you will develop a sixth sense for this stuff at the tables. My co-author Barry found that he became reasonably proficient at guesstimating his equity in tournaments precisely because he had been studying Bubble Factor so much.

The reason why we want to encourage a renaissance for Bubble Factor in the modern game, rather than just suggesting you study ranges in an ICM calculator, is because it is a foundational skill that allows you to think reflexively in unusual or tough spots. Most people know they should make tight folds on the exact bubble of an MTT, but how should they play when they are second in chips on the final table bubble with a micro stack on the other table? Most of the difficult hands my students send me would have been less stressful had they understood Bubble Factor at a deeper level.

Different players have different Bubble Factors

Now let's look at a more realistic example with a variety of stack sizes. This is from a real final table, we have just rounded up the payouts and stacks to make it easier to read. This is how the final table started, with the equity of each player at the time:

Seat	Potential Payout	Stack	Equity
1	$2,600	100000	$1,480.95
2	$1,700	90000	$1,415.01
3	$1,400	60000	$1,170.78
4	$1,000	50000	$1,067.91
5	$700	50000	$1,067.91
6	$500	40000	$949.69
7	$350	20000	$645.34
8	$250	10000	$436.20
9	$170	10000	$436.20

This is a pretty typical mix of stack sizes with two big stacks, three small stacks and the rest are medium stacks. Let's make the blinds 500/1,000 and, to keep things simple, no antes.

Let's assume that Seat 9 goes all-in under the gun on the Big Blind of Seat 1 (Seat 2 is the Small Blind). Everyone gets out of the way leaving Seat 1, the chip leader, to ponder calling the shove of the smallest stack at the table. If Seat 1 won, this would be the new table set up:

Seat	Potential Payout	Stack	Equity
1	$2,600	110500	$1,558.06
2	$1,700	89500	$1,428.11
3	$1,400	60000	$1,192.35
4	$1,000	50000	$1,091.74
5	$700	50000	$1,091.74
6	$500	40000	$976.27
7	$350	20000	$680.62
8	$250	10000	$481.11
9	$170	0	*$170 (Equity realised)*

However, if Seat 1 lost, this would be the new table set up:

Seat	Potential Payout	Stack	Equity
1	$2,600	90000	$1,402.24
2	$1,700	89500	$1,398.73
3	$1,400	60000	$1,154.88
4	$1,000	50000	$1,050.87
5	$700	50000	$1,050.87
6	$500	40000	$931.54
7	$350	20000	$626.17
8	$250	10000	$419.42
9	$170	20500	$635.28

In this example, Seat 1 would lose $78.71 of equity if they lost. They would gain $77.11 if they won. That would make their Bubble Factor:

$$\$78.71/\$77.11=1.02$$

The required equity to make the call, therefore, would be:

$$1.02/(1.02+1) = 50.5\%$$

Not much extra to call than a normal ChipEV breakeven spot, which makes common sense because the chip leader is not risking much to call the short stack. What about the other way around? What is the short stack's Bubble Factor against the big stack? They have $436.20 equity at the start of the hand, but if they lose they do not lose $436.20 because they will lock up the $170 min cash. That means they are actually risking $266.20 ($436.20-$170). Their new equity would be $635.28 if they won, meaning they would gain $199.08 in equity ($635.28-$436.20).

That would make their Bubble Factor:

$$\$266.20/\$199.08=1.34$$

Assuming Seat 1 is always going to call, the equity they need would therefore be:

$$1.34/(1.34+1) = 57\%$$

The same amount of chips are being risked but the chip leader only needs 50.5% to be breakeven, whereas the short stack needs 57%. This goes against a prevailing wisdom among many poker players that when you are short stacked you should take a stand and gamble with a wide range to get back in the game. As you can see here, the short stack has to play tighter than the chip leader. The fewer chips you have, the more each is worth.

Now let's look at a more extreme example, let's once again remind ourselves how things were at the start of the final table:

Seat	Potential Payout	Stack	Equity
1	$2,600	100000	$1,480.95
2	$1,700	90000	$1,415.01
3	$1,400	60000	$1,170.78
4	$1,000	50000	$1,067.91
5	$700	50000	$1,067.91
6	$500	40000	$949.69
7	$350	20000	$645.34
8	$250	10000	$436.20
9	$170	10000	$436.20

What if, instead of the short stack, it was Seat 2 that decided to go to war with Seat 1? Here we have the two biggest stacks at the table going after each other. What if Seat 2 went all-in on the Big Blind of Seat 1?

If Seat 1 won, this is how things would look:

Seat	Potential Payout	Stack	Equity
1	$2,600	190000	$1,946.52
2	$1,700	0	*$170 (Equity realised)*
3	$1,400	60000	$1,280.92
4	$1,000	50000	$1,182.76
5	$700	50000	$1,182.76
6	$500	40000	$1067.87
7	$350	20000	$760.77
8	$250	10000	$539.21
9	$170	10000	$539.21

If Seat 2 won, this is how things would look:

Seat	Potential Payout	Stack	Equity
1	$2,600	10000	$488.08
2	$1,700	180000	$1,901.92
3	$1,400	60000	$1,251.81
4	$1,000	50000	$1,150.93
5	$700	50000	$1,150.93
6	$500	40000	$1032.92
7	$350	20000	$717.27
8	$250	10000	$488.07
9	$170	10000	$488.07

In this example, Seat 1 loses $992.87 in equity ($1,480.95-$488.08) when the cards do not fall their way. They gain $465.57 in equity when they win ($1,946.52-$1,480.95). They are almost risking twice as much as they stand to gain. Their Bubble Factor is:

$$t\$992.87/\$465.57 = 2.13$$

That would mean to make the move profitable, their equity would have to be:

$$2.13/(2.13+1) = 68\%$$

As you can see, it is a disaster for Seat 1 to get all-in against Seat 2 without a huge hand. Assuming Seat 2 has a strong range here, we are probably looking at QQ+ and would even have to fold AK in this spot. This goes against another misconception that some players have about tournament poker that the big stacks should 'play for the win' and go to war with other big stacks. It is true that the winner of this hand has a great chance to win the tournament, but losing the hand is a disaster when your stack is currently worth so much in equity terms. There are spots where it makes sense to gamble big stack vs big stack which we will explore later in this book, but it isn't when your stack is worth so much in real money terms like it is here.

In this same example, Seat 2 would have a Bubble Factor of 2.56 meaning they would have to have 72% equity. Against a tight range, that would actually mean folding Pocket Kings some of the time.

We could look at every match-up at this table but for brevity, this table shows you what the Bubble Factor would be for each player at this table if they were facing an all-in call against the other player. The vertical axis shows the player making the decision and the horizontal axis shows their opponent. So, for example, if Seat 8 was facing an all-in shove from Seat 6, their Bubble Factor in this table is 1.34.

	Seat 9 (10k)	Seat 8 (10k)	Seat 7 (20k)	Seat 6 (40k)	Seat 5 (50k)	Seat 4 (50k)	Seat 3 (60k)	Seat 2 (90k)
Seat 9 (10k)		1.19	1.27	1.34	1.36	1.36	1.37	1.39
Seat 8 (10k)	1.19		1.27	1.34	1.36	1.36	1.37	1.39
Seat 7 (20k)	1.15	1.15		1.56	1.59	1.59	1.62	1.67
Seat 6 (40k)	1.1	1.1	1.24		1.87	1.87	1.92	2.01
Seat 5 (50k)	1.09	1.09	1.2	1.57		1.98	2.03	2.14
Seat 4 (50k)	1.09	1.09	1.2	1.57	1.98		2.03	2.14
Seat 3 (60k)	1.08	1.08	1.17	1.46	1.7	1.7		2.26
Seat 2 (90K)	1.06	1.06	1.12	1.3	1.41	1.41	1.56	
Seat 1 (100k)	1.05	1.05	1.11	1.26	1.36	1.36	1.49	2.13

There is a lot to observe here but perhaps most important is how significant the Bubble Factor becomes when it is two large stacks going against each other. Nobody at this table likes going up against Seat 1 because losing would end their tournament, but Seat 1 does not like going up against the bigger stacks either because they could do serious damage.

Likewise, Bubble Factor is low when you comfortably cover a player, like most of the table does against Seats 9, 8 and 7. The Bubble Factor for Seat 1 to call Seat 9 is 1.05, ICM barely makes a difference to the equity they need to call compared to if it were a pot odds spot.

The big stacks have low Bubble Factors against the shorter stacks, but the short stacks have low Bubble Factors against everybody. For Seat 9, there is only a 0.21 difference between calling an all-in from fellow 10k stack Seat 8 as there is calling an all-in from the big stack Seat 1. The reason is self-evident, losing means elimination regardless of who you are going up against. The reason there is a difference at all in the Bubble Factors is that if Seat 9 beats Seat 8 (Bubble Factor 1.19), Seat 8 will be eliminated meaning Seat 9 is

guaranteed 8th place cash, so they realise more equity. If Seat 9 beats Seat 1 (Bubble Factor 1.4) there is no such guarantee and they could easily still bust in 9th place. So the lower Bubble Factor between two short stacks is an incentive to bust the other player and realise more equity.

However, it is still worth noting that while short stack and big stack are the two player types with low Bubble Factors, the big stacks still have considerably lower Bubble Factors than the short stacks. This is because survival is a much more pressing concern for the shorter stacks and they still need to protect the chips they have.

Finally, medium stacks going up against medium stacks is almost as harmful as it is for big stacks to take on big stacks. Medium stacks do not want to go up against other medium stacks or big stacks, because it would be a disaster for them to bust and to allow a shorter stack to ladder. Once the Bubble Factor goes beyond 1.5 it begins to have a significant impact on the equity you need to call an all-in.

The big takeaway here is that who you are facing in any given hand is just as important as the ICM implications of the payout structure. You should avoid going to war with another big stack as a big stack, and be quite careful going up against a medium stack as a medium stack. You shouldn't just gamble as the short stack, but you can get your money in much more comfortably than you could as a medium stack.

Assuming your opponents understand ICM, Bubble Factor also points towards who you should be targeting for aggression. A big stack should be playing aggressively against other big stacks and medium stacks (just not calling them all-in with a weak range) because they stand to lose the most equity against them. A short stack should be staying out of the way of the bigger stacks because they can call them lightly, and instead should look to target other vulnerable stacks who are most likely to fold against them.

An extreme stack size at the table

We have seen that Bubble Factor varies between stack sizes. In some circumstances the presence of extreme stack sizes, both short and large, can have a dramatic impact on the Bubble Factor of everyone at the table.

Let's go back to our original example, but make Seat 9 a micro stack with just 500 chips. This is how the equities would start out:

Seat	Potential Payout	Stack	Equity
1	$2,600	100000	$1,505.43
2	$1,700	90000	$1,440.34
3	$1,400	60000	$1,199.28
4	$1,000	50000	$1,097.77
5	$700	50000	$1,097.77
6	$500	40000	$981.16
7	$350	20000	$682.08
8	$250	10000	$479.18
9	$170	500	$186.98

And this is what the Bubble Factor's would be for everyone at the table:

	Seat 9 (0.5k)	Seat 8 (10k)	Seat 7 (20k)	Seat 6 (40k)	Seat 5 (50k)	Seat 4 (50k)	Seat 3 (60k)	Seat 2 (90k
Seat 9 (0.5k)		1.01	1.03	1.03	1.03	1.03	1.03	1.03
Seat 8 (10k)	1.01		1.52	1.62	1.64	1.64	1.66	1.69
Seat 7 (20k)	1.01	1.13		1.71	1.75	1.75	1.78	1.84
Seat 6 (40k)	1	1.1	1.22		1.97	1.97	2.02	2.12
Seat 5 (50k)	1	1.09	1.19	1.54		2.06	2.12	2.24
Seat 4 (50k)	1	1.09	1.19	1.54	2.06		2.12	2.24
Seat 3 (60k)	1	1.08	1.17	1.44	1.67	1.67		2.35
Seat 2 (90K)	1	1.06	1.12	1.29	1.4	1.4	1.55	
Seat 1 (100k)	1	1.05	1.11	1.26	1.36	1.36	1.47	2.1

If you compare this to the original table of Bubble Factors the most obvious thing to notice is how widely everyone can call against the micro stack. There is essentially no Bubble Factor for anyone at the table to call Seat 9 because it is so little for anybody to worry about.

The more interesting thing to observe is what it does to the Bubble Factors for everyone else at the table when Seat 9 is not involved in the hand. Almost all of the Bubble Factors have gone up. In the first example, for Seat 8 (10k) to call a shove from Seat 6 (40k) they had a Bubble Factor of 1.34, but in this new example their Bubble Factor is 1.62. In the first example, when Seat 6 (40k) calls a shove from Seat 3 (60k) their Bubble Factor is 1.92, in this new example it is 2.02. When the second in chips Seat 2 (90k) calls a shove from Seat 1 (100k), in the first example their Bubble Factor is 2.56, but in the new example it is 2.63.

The lesson is clear, you need to call much tighter whenever there is a micro stack in an ICM heavy situation. With such a short stack at the table the remaining players are almost guaranteed to move up a pay jump simply

by waiting out Seat 9. As such they need a very strong hand to call an all-in that would eliminate them.

This also means that the larger stacks can exert a lot of pressure on the medium stacks at the table, because they will know folding will almost certainly earn them an additional $80 in real money payouts. It is in the interest of the largest stack at the table to keep the short stack alive because they can exploit the situation by taking down more uncontested pots. Old school SNG grinders knew this and would often fold their Small Blind to the Big Blind of a short stack just to keep the bubble going.

What about when a very large stack is present at the table? This is what the equities would look like in our original example if Seat 1 had 300,000 chips rather than 100,000:

Seat	Potential Payout	Stack	Equity
1	$2,600	300000	$1,998.38
2	$1,700	90000	$1,299.23
3	$1,400	60000	$1079.87
4	$1,000	50000	$987.43
5	$700	50000	$987.43
6	$500	40000	$881.10
7	$350	20000	$606.16
8	$250	10000	$415.20
9	$170	10000	$415.20

And this is what the Bubble Factors would be:

	Seat 9 (10k)	Seat 8 (10k)	Seat 7 (20k)	Seat 6 (40k)	Seat 5 (50k)	Seat 4 (50k)	Seat 3 (60k)	Seat 2 (90k)
Seat 9 (10k)		1.19	1.28	1.36	1.38	1.38	1.39	1.41
Seat 8 (10k)	1.19		1.28	1.36	1.38	1.38	1.39	1.41
Seat 7 (20k)	1.15	1.15		1.59	1.62	1.62	1.65	1.7
Seat 6 (40k)	1.1	1.1	1.23		1.89	1.89	1.94	2.05
Seat 5 (50k)	1.09	1.09	1.19	1.57		1.99	2.05	2.17
Seat 4 (50k)	1.09	1.09	1.19	1.57	1.99		2.05	2.17
Seat 3 (60k)	1.08	1.08	1.17	1.45	1.69	1.69		2.28
Seat 2 (90K)	1.06	1.06	1.12	1.28	1.4	1.4	1.54	
Seat 1 (300k)	1.02	1.02	1.03	1.06	1.08	1.08	1.1	1.16

Seat 9 can call everyone at the table much wider, their Bubble Factor is practically 1 against most players and it is even as low as 1.16 against Seat 8 who is the second biggest stack, when it was 2.13 in the original example. Quite simply with such a large stack compared to everyone else, nobody can harm them significantly and as such they can play almost in accordance with ChipEV. Covering another player does not mean you can call them wide, but covering them by a lot does.

The more interesting thing to note is that, other than the chip leader, the Bubble Factor of all the other players at the table goes up. All the Bubble Factors are essentially slightly higher with a few exceptions, and the bigger their stack the bigger the Bubble Factor. Why would this be the case when a micro stack at the table also causes everybody's Bubble Factors to go up? If we should fold tighter because we are guaranteed a pay jump when the micro stack busts, why is it not the case that a monster stack would cause us to play more loose? This is what I call the 'playing for the win' fallacy. A lot of players would assume that with a huge stack at the table, we need to play loose to give us a chance at overtaking them.

The best way to explain this is that Seat 1 has so much equity that it is more important for the rest of the table to play for 2nd and 3rd place. With such a big stack at the table ICM wants us to make sure we can lock up the biggest payout we can, rather than punting off the equity we have to try to get 1st place. Especially because we can expect Seat 1 to eliminate some of the small stacks for us, as a medium stack we can reliably ladder our way to 2nd or 3rd. Getting heads-up is our priority when there is a monster stack at the table even if it means we can get there short.

I noticed this myself many years ago when I made one of my first ever final tables at the Fitzwilliam Card Club in Dublin. I came into the final table nine of nine, but I wasn't too far behind the guy who was 2nd in chips. This was because the chip leader had over half the chips in play and in practice the rest of us were all playing a separate final table for 2nd. Nobody else realised this, however, and each one of them took the approach they had to gamble with the big stack to be in contention to win the title. As a result I managed to get heads-up without actually playing a single hand. The equity icing on the cake was the chip leader offered me an even chop heads-up despite having something like a 25-to-1 chip lead.

Payouts impact Bubble Factors

We have seen the impact different stack sizes have relative to each other on Bubble Factor. The other thing that influences it greatly is the payout structure of the tournament.

The initial example we keep coming back to used a standard payout structure from a tournament on PokerStars. What happens when we make the payout structure more top heavy? In the following example we have used the same payouts but added a whopping $5,000 to the first prize. This is the sort of massive pay jump you might see in an added value tournament, for example one where a $5,000 seat to a major event is added.

Seat	Potential Payout	Stack	Equity
1	$2,600 + $5,000	100000	$2,643.74
2	$1,700	90000	$2,461.52
3	$1,400	60000	$1,868.46
4	$1,000	50000	$1,649.31

5	$700	50000	$1,649.31
6	$500	40000	$1,414.80
7	$350	20000	$877.90
8	$250	10000	$552.48
9	$170	10000	$552.48

And this is what the Bubble Factors look like:

	Seat 9 (10k)	Seat 8 (10k)	Seat 7 (20k)	Seat 6 (40k)	Seat 5 (50k)	Seat 4 (50k)	Seat 3 (60k)	Seat 2 (90k)
Seat 9 (10k)		1.13	1.18	1.21	1.22	1.22	1.23	1.24
Seat 8 (10k)	1.13		1.18	1.21	1.22	1.22	1.23	1.24
Seat 7 (20k)	1.09	1.09		1.32	1.33	1.33	1.35	1.37
Seat 6 (40k)	1.06	1.06	1.12		1.41	1.41	1.43	1.46
Seat 5 (50k)	1.05	1.05	1.1	1.26		1.43	1.44	1.48
Seat 4 (50k)	1.05	1.05	1.1	1.26	1.43		1.44	1.48
Seat 3 (60k)	1.04	1.04	1.08	1.2	1.29	1.29		1.49
Seat 2 (90K)	1.02	1.02	1.05	1.11	1.15	1.15	1.2	
Seat 1 (100k)	1.02	1.02	1.04	1.09	1.12	1.12	1.35	1.35

Compare this to the first table of Bubble Factors and with few exceptions the Bubble Factors have come down for every player, in some cases dramatically. Even Seat 8, who is second in chips, sees their Bubble Factor go down from 2.56 to 1.49 against the chip leader. When the first prize is large enough it becomes more important to take risks for 1st place than it is to ladder to one of the other payouts. It becomes closer to a WInner-Takes-All tournament where the correct strategy is to play closer to ChipEV. Note that this is counter-intuitive for a lot of players who think the bigger the first prize is, the more extreme the ICM. The reality is the opposite. The more top heavy the payouts the lower the ICM (with a WInner-Takes-All tournament being the extreme where there is no ICM). Conversely, the flatter the payouts the more extreme the ICM and the more important it becomes to ladder, which again goes against the intuition of many.

Let's look at what happens when we have a flatter payout structure. Below is an example with the same chip stacks but the payouts are closer to each other:

Seat	Potential Payout	Stack	Equity
1	$2,000	100000	$1,415.65
2	$1,700	90000	$1,369.14
3	$1,400	60000	$1,180.32
4	$1,200	50000	$1,092.26
5	$1,000	50000	$1,092.26
6	$650	40000	$984.16
7	$400	20000	$671.23
8	$200	10000	$432.49
9	$120	10000	$432.49

And this is what the Bubble Factors would be:

	Seat 9 (10k)	Seat 8 (10k)	Seat 7 (20k)	Seat 6 (40k)	Seat 5 (50k)	Seat 4 (50k)	Seat 3 (60k)	Seat 2 (90k)
Seat 9 (10k)		1.22	1.31	1.4	1.43	1.43	1.45	1.47
Seat 8 (10k)	1.22		1.31	1.4	1.43	1.43	1.45	1.47
Seat 7 (20k)	1.19	1.19		1.76	1.81	1.81	1.85	1.92
Seat 6 (40k)	1.15	1.15	1.35		2.41	2.41	2.49	2.65
Seat 5 (50k)	1.13	1.13	1.3	1.94		2.66	2.75	2.96
Seat 4 (50k)	1.13	1.13	1.3	1.94	2.66		2.75	2.96
Seat 3 (60k)	1.12	1.12	1.26	1.75	2.19	2.19		3.23
Seat 2 (90K)	1.09	1.09	1.19	1.47	1.68	1.68	1.95	
Seat 1 (100k)	1.08	1.08	1.17	1.42	1.59	1.59	1.81	3.11

Unsurprisingly, the Bubble Factors have gone up across the board, in some cases dramatically. Many of the medium stacks have a Bubble Factor higher than 2 and for the second biggest stack to take on the biggest stack they have a Bubble Factor of 3.98. They would need 80% equity to justify calling an all-in from the chip leader which only leaves Pocket Aces in their range.

With a flatter payout structure there is less impetus to fight for 1st place and it becomes more important to ladder to one of the payouts in places 2-6. The only payout structure where you will see more extreme Bubble Factors will be in a satellite where all prizes are of equal value. This shows why typical comments like "the next pay jump is small I should gamble" is backwards logic, the smaller the pay jump the greater the ICM.

The adjustment you need to make when payouts are flatter is the same one you would make in a satellite, you need to call much tighter but you can also accumulate more chips by putting pressure on other players. Fold equity is the most important form of equity when everyone is incentivised to fold.

Let's look at one final example where payouts are concerned. This time let's use the same stacks and payouts but make it so we are on the money bubble by removing the 9th place prize. This is what the equities look like:

Seat	Potential Payout	Stack	Equity
1	$2,600	100000	$1,480.56
2	$1,700	90000	$1,414.44
3	$1,400	60000	$1,168.75
4	$1,000	50000	$1,064.55
5	$700	50000	$1,064.55
6	$500	40000	$943.79
7	$350	20000	$621.35
8	$250	10000	$371.01
9	$0	10000	$371.01

And these are the Bubble Factors:

	Seat 9 (10k)	Seat 8 (10k)	Seat 7 (20k)	Seat 6 (40k)	Seat 5 (50k)	Seat 4 (50k)	Seat 3 (60k)	Seat 2 (90k)
Seat 9 (10k)		1.28	1.48	1.59	1.59	1.62	1.63	1.66
Seat 8 (10k)	1.28		1.48	1.59	1.59	1.62	1.63	1.66
Seat 7 (20k)	1.22	1.22		1.93	1.97	1.97	2	2.06
Seat 6 (40k)	1.12	1.12	1.28		2.24	2.24	2.29	2.41
Seat 5 (50k)	1.1	1.1	1.22	1.68		2.33	2.39	2.52
Seat 4 (50k)	1.1	11	1.22	1.68	2.33		2.39	2.52
Seat 3 (60k)	1.09	1.09	1.19	1.5	1.8	1.8		2.62
Seat 2 (90K)	1.06	1.06	1.13	1.3	1.43	1.43	1.58	
Seat 1 (100k)	1.06	1.06	1.12	1.27	1.37	1.37	1.5	2.24

The difference between this example and our very first example is similar to the last example with flatter payouts. Being on the bubble increases the Bubble Factor of everyone at the table, though not quite as much. Busting next would be a disaster for everyone at the table, but not as much as in the last example because we still have the bigger 1st place prize worth taking a risk for. Seat 2 would need 74% equity to risk elimination from Seat 1, which against most ranges will still be Aces only.

As we have learnt so far the factors that influence Bubble Factor are the stack sizes, the payout structure and how close we are to the Bubble. We will explore a quick way to work out Bubble Factor when you are actually playing but until then here is an image that really helped me understand it in large multi table tournaments. Below is an image from *Kill Everyone* and it shows the average Bubble Factor in a big MTT like the Sunday Million at different stages.

As you can see the average Bubble Factor starts low then rises steeply on the money bubble to 1.6 before going down considerably once the players are

in the money. Then it rises steeply before the final table to 1.7 then goes downhill again, not as sharply, until heads-up. At heads-up Bubble Factor becomes 1, or ChipEV, because ICM no longer applies.

You are probably not surprised that the average Bubble Factor is high on the bubble, that's where the name comes from. Some of you may be surprised at the final table, however. It is highest just before the final table and goes downhill with every payout. A lot of players would assume it would be highest at the final table where the prizes are the biggest and get bigger with every subsequent bust out, but actually the final two tables is where ICM is heaviest.

Why does Bubble Factor go down at the final table? Because you have all realised a lot of equity. In our example if five players are left the first prize is $2,600, which seems like a lot compared to the min cash but everyone left has already realised $700, which is the 5th place payout. When you get heads-up the first prize is $2,600 but you are actually just having a winner-takes-all match for $900 because you have both locked up $1,700 in 2nd place money.
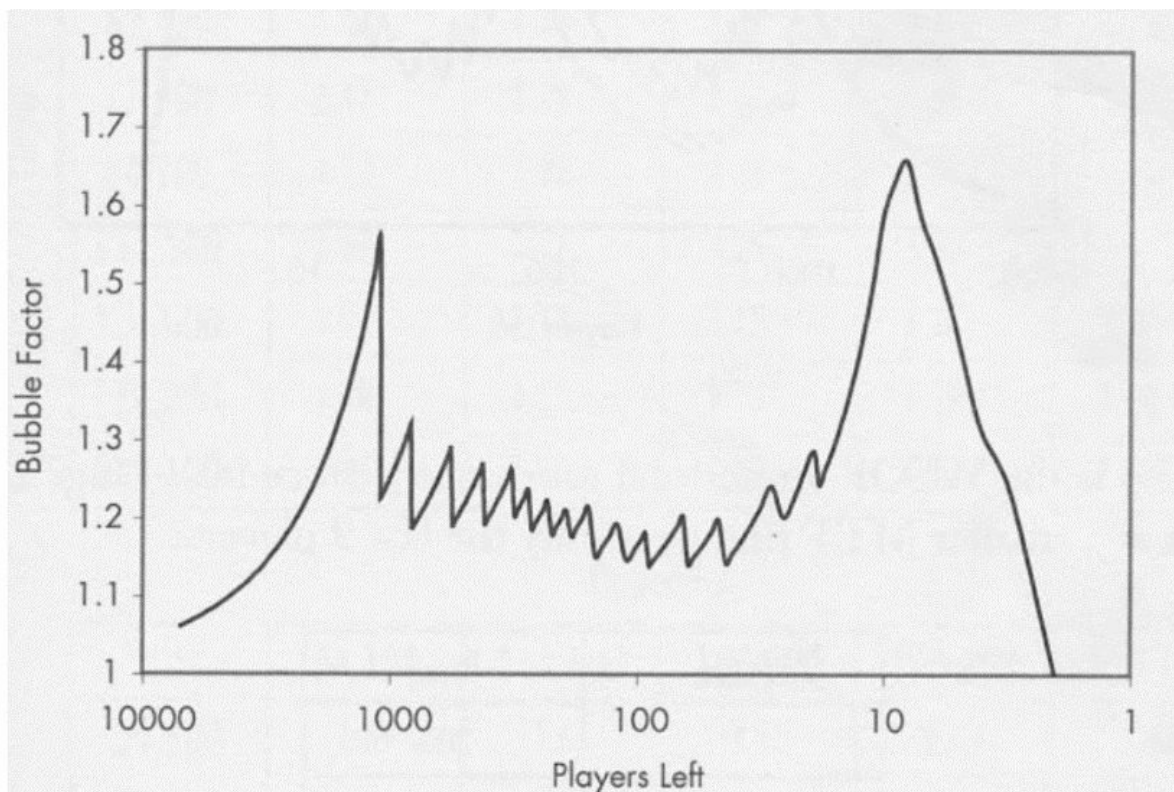
The final table bubble, however, is where ICM is the steepest because you are one elimination away from realising the big prizes. This is why the WSOP Main Event final table bubble is the most intense part of the tournament, not the final table itself.

How to work out equity & Bubble Factor at the tables

The primary purpose of this chapter is to give you a guide for your self study away from the tables. Don't try to memorise these Bubble Factor tables, doing your own calculations on real hands you have played is the best way to develop an instinct you can take to the tables.

Having said that, I have developed some 'Guerilla Maths' techniques for working out your equity while playing. These are all on-the-fly calculations and not 100% accurate, but they give a rough idea of your equity at different stages.

Early equity

If you want a rough method to use early on, before the bubble, you can simply multiply the number of starting stacks you have by the buy-in. So if the starting stack is 10,000 and the buy-in is $100, if you have 40,000 chips before the bubble bursts you can very roughly estimate your stack is worth $400. This is essentially ChipEV which is the wrong metric to use in tournaments in general and it can only be used sparingly before the bubble, when all of the prize pool is still in play. If you are a short stack those 40,000 chips will be worth a lot more than $400, and if 40,000 is the current chip lead it is likely worth much less than $400. To be honest the only real benefit of doing this particular calculation is just to get you thinking more about your equity in general.

On the bubble

We can get a rough idea of our equity on the exact bubble by fast forwarding to what it would be when the bubble bursts and using that as a rough guide on what we are risking on the bubble. We estimate our equity after it bursts as the value of a min cash plus our percentage of the remaining

prize pool based on our percentage of chips.

Let's assume we have a $100 buy-in, 500 runner field, 60 players make the money and the min cash is two buy-ins. This means when the bubble bursts everyone is guaranteed two buy-ins (120 buy-ins in total) and their share of the remaining prize pool (380 buy-ins total) based on their share of the chips.

A player who gets through the bubble with a starting stack would have equity of two buy-ins plus one 500th of the other 380 buy-ins (0.76 buy-ins). So their equity would be 2.76 buy-ins, or $276.

If this player was all-in on the bubble they would only gain one starting stack (0.76 buy-ins) in equity but would be risking 2.76 buy-ins. This means they would need 78% equity, which against any two cards would make JJ a fold, and against a top 20% range would make the only hand they could call with Aces.

If a player gets through the bubble with five starting stacks, their equity would be two buy-ins plus 5/500ths of the remaining prize pool (3.8 buyins). Their equity would be 5.8 buy-ins, or $580. If this player got all-in before the bubble they would be risking 5.8 buy-ins to win 3.8. A quick Bubble Factor calculations shows they need 60% equity, which against the top 20% of hands would mean they need JJ+ and AKs to call.

This particular calculation is probably quite daunting if you are not brilliant at maths on-the-fly and it is probably wise to avoid it if you don't feel comfortable doing it.

After the bubble
When the bubble has burst, your stack is now worth roughly the percentage of chips you have multiplied by the remaining prize pool, plus the amount you're guaranteed. Let's say that there are 15 players left in a tournament with a $100,000 prize pool, the bubble has burst and the min cash is $1,000. There are 1 million chips in play and you have 50,000 chips, so you have 5% of the chips in play.

That means your stack is worth 5% of $85,000 (because $15,000 in the form of 15 x $1,000 min cashes has been removed) or $4,250, plus the $1000 min cash for a total of $5250.

This method obviously has a lot of 'ifs' and 'buts' which is why you should use it as a rough guide rather than making key decisions based on it. A flat or top heavy payout structure will impact it, and the presence of very big, very short, or evenly spread out stacks will also have a big influence. If you are one of the shorter stacks you can usually add a bit more on top of the equity, if you have a big stack you should shave some equity off. As a method it is more accurate with less players remaining in the field, so it will be more useful at final tables than with 30 players left.

Once again, the best use of your time will not be to try to work out equity in real time at the tables. Instead, do accurate calculations on hands you played afterwards using ICMIZER and other solvers as a way to develop an instinct for this. Once you have played around with the solvers and in particular seen the impact of short stacks, big stacks and different payout structures, you will be much better at guesstimating your equity without having to do the maths in real time.

Final thoughts on Bubble Factor

When you study Bubble Factor in depth not only do you begin to be able to estimate it in-game but it also changes the way you think about tournaments. It is a replacement for thinking in terms of pot odds in a tournament and you eventually start thinking about hands in terms of the real money equity you gain and lose, rather than thinking in terms of chips and finishing position. ICM extreme decisions become much easier when you can think in terms of "I am risking $600 in equity to win $450 in equity" instead of "if I lose this hand I am out and I really want to lock up third place prize money".

Bubble Factor informs more than just calling shoves, it actually impacts everything at the table and it will inform the remainder of this book.

If you have skimmed this section, please return to it when you are feeling sharp. We haven't just included it as a homage to the classic book *Kill*

Everyone, we think it is a foundational concept that helps you understand and use ICM reflexively at the tables.

Key Takeaways:

- In a tournament you always win less equity than you risk on a chip for chip basis
- To get your Bubble Factor divide the equity you lose by the equity you gain
- Bubble Factor/(Bubble Factor + 1) gives you the equity you need to call an all-in
- Bubble Factor influences your calling equities even at the start of a tournament
- Bubble Factor goes down with every payout at a final table and is 1 at the heads-up stage
- Flat payout structures have bigger Bubble Factors
- Top heavy payout structures have smaller Bubble Factors
- Small stacks have lower Bubble Factors because they have the least to lose and the most to gain, so they are incentivised to accumulate chips.
- Big stacks have lower Bubble Factors because calling all-ins hurt them the least, unless they are against other big stacks
- Medium stacks have high Bubble Factors because they can be hurt most in equity terms
- The biggest Bubble Factors, however, are when a big stack clashes with a big stack
- When Bubble Factors are high you should call tight but you can exploit other players with aggression

Things the pros don't know

- The presence of a very small or very big stack at the table tends to increase the Bubble Factors for the rest of the table, for different reasons
- Bubble Factor is more extreme for all players near money bubbles and final table bubbles

Chapter 4: The more chips you have the less each is worth

The next foundational concept in understanding ICM is the diminishing value of chips. In a tournament, the more chips you have the less each chip is worth. This concept influences everything in tournaments from the range you should play, whether you should rebuy, when you should register and even staking considerations.

To bring this idea to life, let's return to the final table example we used a lot in the last chapter. A reminder, this is how the final table started:

Seat	Potential Payout	Stack	Equity
1	$2,600	100000	$1,480.95
2	$1,700	90000	$1,415.01
3	$1,400	60000	$1,170.78
4	$1,000	50000	$1,067.91
5	$700	50000	$1,067.91
6	$500	40000	$949.69
7	$350	20000	$645.34
8	$250	10000	$436.20
9	$170	10000	$436.20

Seat 1 has 100,000 chips and their equity is $1,480.95. That makes 1,000 chips worth $14.80. Seat 9 has 10,000 chips and their equity is $436.20, making 1,000 chips worth $43.62. Seat 9 has 10% of the stack of Seat 1, but each chip is worth four times as much. This is what I call a 'punishment factor' for the chip leader, while it is much more desirable to be a chip leader because you will win most often, you get the least additional equity for each chip you win.

A good example of this came just before we started writing this book. GGPoker allowed players to buy and sell pieces of players who had made Day 2 of their big online tournaments. The value of each player's stack was based not on their current real money equity but simply by the number of starting stacks they had accrued in Day 1, plus an additional markup they were allowed to add. So if it was a $10 MTT and one player had won ten starting stacks, their stack would be worth $100 and 1% would be $1, before markup. A player who had struggled over the line with just two starting stacks would be valued at $20 or $0.20 for 1%, before markup. If the example at the start of this chapter was used then Seat 1 would be worth $2,023 and Seat 9 would be worth $202. We know that the big stack is actually worth $1,480.95 and the small stack is worth $436.20, so both are wildly inaccurate.

We mentioned in the last chapter that when you study Bubble Factor it allows you to think more reflexively about ICM when unusual situations come up. This is a good example of that. My co-author Barry by his own admission is a modest player, but because he had been studying Bubble

Factor for our previous books he immediately intuited that the small stacks were the better investment. They were undervalued and had a much bigger upside, especially because the chip leaders were adding a markup to their staking offer.

We will discuss final table deals later on in this book and you see a similar thing where people chronically overvalue the big stack and undervalue the small stack when trying to agree on a chop. Often the first time a player is introduced to ICM it is during a deal and they are shocked at how capped the leader's equity is and how seemingly generous the small stack is valued.

People who understand ICM know that the short stacks are worth more, relatively, than the big stacks and can confidently turn down deals that don't reflect that. They know the more chips you have, the less each is worth.

Late mistakes vs early mistakes

One of the first players I ever coached early in my career was one of Ireland's top online cash players. Frustrated by his lack of success in tournaments he came to me to try to identify what, if anything, he was missing.

"I don't understand why I'm not crushing. Tournament players seem terrible, I see them routinely make massive mistakes" he told me.

"How big are these mistakes?" I asked.

"I mean I see horrendous stuff, five big blind mistakes" he replied.

"A five big blind mistake at the start of a tournament when everyone has 100 big blinds is worth 5% of a buy-in in equity. A one big blind mistake when the average stack is 20 big blinds and 100 starting stacks with ten left in a 1,000 runner tournament is worth 100 times more, five buy-ins" I replied.

A small mistake in the late stages of the tournament when the stacks are shallow is significantly more costly than the same error at the start of the tournament, because each chip is worth much more.

This is why understanding ICM and shallow stack play is way more important than being able to play deep poker. Tournament players get teased by cash game players because of how poorly, by comparison, they handle a deep stack but in reality it's not that important in a tournament. In big tournaments like the WSOP Main Event there is always a big Day 1 chip leader who is a cash game regular but they almost never manage to get to the final table because deep stack play is not as important as knowing how to handle a 30 big blind stack when the payouts are a factor.

Studying ICM in depth will fix most of your late game mistakes so that this is no longer an issue. Studying shallow stack strategy (40BB and under) goes hand in hand with studying ICM in ensuring you make the best decisions possible when the most equity is on the line. Most poker books and courses start by looking at early game, deep stack, play but that is a real waste of your time to begin with, especially because you can't top up a 100BB stack in a tournament and you might be down to 40BBs after the first hand.

Let the cash game players tease you about your 100BB play, because you know that those chips are worth much less than a 30BB stack later in the tournament. In fact if you understand ICM at all, you may not even be at the table during those deep stack stages...

Late registration

Perhaps the most immediate way in which understanding ICM can improve your bottom line is informing *when* you should register for a tournament. At this stage it is perhaps the worst kept secret in poker that when you register late for a tournament you get an instant ICM boost. The only exception is PKOs where you want to be around for every bounty possible. If you have read our previous book *Poker Satellite Strategy* you will know all about how profitable late registration is and you are free to skip ahead to the next section.

Let's use a simple example, we'll start with a 10 person tournament with payouts the same as the SNG in the last chapter:

Player	Potential Payout	Stack	Equity
1	$50	10,000	$10
2	$30	10,000	$10
3	$20	10,000	$10
4		10,000	$10
5		10,000	$10
6		10,000	$10
7		10,000	$10
8		10,000	$10
9		10,000	$10
10		10,000	$10

If you register on time, your equity is $10 (assuming no rake) just like everybody else. But let's say that the first five players have bust and everyone at the table has doubled up once. Now if you register you will be at a 2-1 chip disadvantage with every single player, but what about equity?

Player	Potential Payout	Stack	Equity
1	$55	20,000	$19.83
2	$33	20,000	$19.83
3	$22	20,000	$19.83
4		20,000	$19.83
5		20,000	$19.83
6		0	$0
7		0	$0
8		0	$0
9		0	$0
10		0	$0
11		10,000	$10.87

Your equity has increased to $10.87 simply by turning up after five players have bust. At many poker rooms that almost mitigates the impact of rake on your equity. Let's look at the same example but with a more realistic mix of stack sizes:

Player	Potential Payout	Stack	Equity
1	$55	35,000	$30.53
2	$33	25,000	$24.61
3	$22	20,000	$20.87
4		15,000	$16.49
5		5,000	$5.99
6		0	$0
7		0	$0
8		0	$0
9		0	$0
10		0	$0
11		10,000	$11.51

Now you have gained an extra $1.51, or 15%, in equity in a more realistic example. This is mostly because inevitably there will be players who have barely got off the starting blocks or have less than what they started with.

Let's now try something that looks a little bit closer to a regular MTT. This time we have 33 players registered, 18 have bust and 15 remain. We enter just before the late registration period.

Player	Potential Payout	Stack	Equity
1	$80	50,000	$43.48
2	$75	45,000	$40.81
3	$60	40,000	$37.85
4	$50	30,000	$30.93
5	$40	30,000	$30.93
6	$35	25,000	$26.90
7		20,000	$22.44
8		20,000	$22.44
9		15,000	$17.54
10		15,000	$17.54
11		10,000	$12.17
12		10,000	$12.17
13		5,000	$6.32
14		5,000	$6.32
34		10,000	$12.17

Now we (Player 34) have increased our equity by $2.17, or almost 22%. Just for fun, let's see what would happen if we late registered on the literal money bubble. This occasionally happens at some of the smaller less well established online poker rooms. I once did this playing on ACR registering the last possible minute two places before the money. I had made the money before my first hand was dealt.

Player	Potential Payout	Stack	Equity
1	$80	90,000	$63.21
2	$75	80,000	$61.39
3	$60	50,000	$53.43
4	$50	40,000	$49.32
5	$40	35,000	$46.77
6	$35	35,000	$46.77
34		10,000	$19.12

We have almost doubled our equity. This is an extreme example but it illustrates how profitable it is to late register. If you had a policy of only registering late it will perhaps have the biggest single impact on your bottom line than any other piece of advice in this book.

These are very simple examples using the excellent, but limited, free ICM calculator at www.icmpoker.com. In a regular multi table tournament the benefits get much more pronounced. You don't even need an ICM calculator to see why.

It stands to reason that the more players that have been eliminated the closer you are to making the money, and beyond. The other reason why late registering is profitable is because literally your chips are worth more. Look at our last example, we gain $9.12 in equity, but look at Players 1 & 2, the two big stacks. Player 1 has 90,000 chips and their equity is $63.21, Player 2 has 80,000 chips and their equity is $61.39. Player 1 has 10,000 more chips than Player 2 but only gains $1.82 in equity, for the same 10,000 chips we gain $9.12 in equity because the chips are worth more to us. They are worth less to Player 1 because their upside is capped, the maximum they can win is $80 which is $16.79 more than their current equity. This is what I called the 'punishment factor' that a chip leader experiences. However, we can more than 4x our equity or bag plenty of welcome consolation prizes along the way.

Late registering is profitable for two reasons. We start closer to the money and our chips are worth more because they have a greater upside.

There is a very real criticism of this approach which is that you will always enter the tournament short stacked and playing catch up. This is true.

You will find yourself often registering late and immediately busting out the first time you play a hand. Humans have a frequency bias where this sort of thing is concerned, it is very hard to compute you are doing the right thing when you seem to be busting out every time you do it. This is where understanding how to play shallow stacks comes into play, but also having a good mental game and sound bankroll management.

If you are an amateur player you probably prefer to register early to get as much play in as possible; that's fine if that is what you want to get out of the session. However, my advice for amateur players, if their primary aim is to make money, is that they should register as late as possible. They get an instant ICM boost and enter the tournament when the stack-to-pot ratio is lower and as such the professional players have less of an edge over them.

If you are a serious player then the one exception you can justifiably make is when the tournament is a 'bucket list' type event that attracts recreational players. Tournaments like the WSOP Main Event or the Irish Open. Here you can perhaps make more money by registering early and enjoying a big edge over recreational players.

Late registering is a clear example of the fewer chips you have the more each is worth. In our examples our 10,000 chip stack has gotten lower in value relative to the average chip stack in play, but has increased in equity value the later we are in the tournament.

Rebuy tournaments

ICM has a more transparent impact on rebuying in a tournament. Rebuy and add-on tournaments are less popular than they once were since re-entry tournaments became en vogue, but they still happen, especially live. If you don't play rebuy tournaments please still read this section as it is valuable to understand in general. In this format you can purchase one or two starting stacks for the initial buy-in and an add-on at the end of the late registration period usually for twice as many chips. So it might be $10 to buy 1,000 chips, another $10 for another 1,000 chips or as a rebuy, and $10 to purchase 2,000 chips at the add-on stage.

This creates a unique situation where different players will pay different

amounts per chip.

In the example above, Player A buys in once and adds on gets 3,000 chips for $20, or $6.67 per 1,000 chips.

Player B rebuys once and adds on purchases 4,000 chips for $30, or $7.50 per 1,000 chips.

Player C rebuys twice and adds on purchases 5,000 chips for $40, or $8 per 1,000 chips.

Player D doesn't rebuy or add-on, they pay $10 per 1,000 chips.

In the example above there is a clear winner, Player A is buying equity much cheaper than anyone else in the tournament. Not rebuying but adding on is costing Player A $3.33 less per 1,000 chips than it is costing Player D. Not adding on is by far the biggest mistake here and you will see a lot of players make this error, either because they are taking a punt on running up a big stack with just one entry or they do not realise it is a rebuy tournament.

This dynamic creates a massively profitable late registration exploit where it is best to max late register the tournament on a single entry, stall until the add-on period, then add-on only. In the example above you get a 3,000 stack for $20. You lose some equity in the form of the blinds and antes you post while stalling, but it is more than made up for by the fact you are registered late. Practically speaking, most players do not buy a double stack at the start anyway and enough players do not purchase the add-on so you end up late regging your way to a healthy stack.

I have never played a rebuy tournament from the start and I have advised many players not to do this, but they struggle because it is very counterintuitive advice. Again, there is a frequency bias because you often bust soon after the add-on.

We have crunched the numbers on the add-on and with very few exceptions you should always do it, even if you have a massive stack. This is the same $10 tournament, 30 players entered, 15 remain and everyone has rebought once on average. These are the equities before the add-on:

Player	Potential Payout	Stack	Equity
1	$300	10,000	$94.60
2	$180	9,000	$86.59
3	$120	8,000	$78.24
4		7,000	$69.55
5		6,000	$60.53
6		5,000	$51.20
7		4,000	$41.54
8		3,000	$31.59
9		2,000	$21.33
10		1,000	$10.80
11		1,000	$10.80
12		1,000	$10.80
13		1,000	$10.80
14		1,000	$10.80
15		1,000	$10.80

This is what happens when everyone adds on:

Player	Potential Payout	Stack	Equity
1	$375	12,000	$95.80
2	$225	11,000	$88.73
3	$150	10,000	$81.50
4		9,000	$74.85
5		8,000	$66.50
6		7,000	$58.74
7		6,000	$50.80
8		5,000	$42.74
9		4,000	$34.45
10		3,000	$26.10
11		3,000	$26.10
12		3,000	$26.10
13		3,000	$26.10
14		3,000	$26.10
15		3,000	$26.10

As you have probably guessed at this stage, the short stacks gain the most equity by adding on and the chip leader gains the least, because the fewer chips you have the more each is worth. A short stack gets $15.30 in equity for their $10 add-on, the chip leader gets $1.20 in equity for a $10 add-on. That does not sound like a wise investment for the big stack, but what if they elect not to add-on when everyone else does?

Player	Potential Payout	Stack	Equity
1	$370	10,000	$81.91
2	$220	11,000	$89.17
3	$150	10,000	$81.20
4		9,000	$74.49
5		8,000	$66.89
6		7,000	$59.09
7		6,000	$51.14
8		5,000	$43.15
9		4,000	$34.72
10		3,000	$26.27
11		3,000	$26.27
12		3,000	$26.27
13		3,000	$26.27
14		3,000	$26.27
15		3,000	$26.27

Now the chip leader's stack is worth less than it was before the add-on period. It was worth $94.60 before add-ons, worth $95.80 when he adds on but worth $81.91 if he chooses not to add-on when everyone else does. The chip leader loses $12.69 in equity by not adding on so he is left with having to add-on essentially out of spite to stop his equity going to the other players at the table. This is a very obvious example of the punishment factor that comes with being the chip leader, his upside is so capped it becomes about not letting the other players catch up to him.

We could go on, but for brevity we worked out that the chip leader in this example needed about 25% of the chips in play before adding on was not prudent for them. It will vary in different tournaments depending on the other stacks and the payout structure, but quite simply you need a monster stack to even consider it.

Let's do the same example but this time what if one of the short stacks does not add-on?

Player	Potential Payout	Stack	Equity
1	$370	12,000	$96.62
2	$220	11,000	$89.53
3	$148	10,000	$82.25
4		9,000	$74.80
5		8,000	$67.17
6		7,000	$59.34
7		6,000	$51.53
8		5,000	$43.20
9		4,000	$34.87
10		3,000	$26.39
11		3,000	$26.39
12		3,000	$26.39
13		3,000	$26.39
14		3,000	$26.39
15		1,000	$8.94

This actually puts the short stack in the same position, his equity falls below his starting equity in the tournament. He had $10.80 before the add-on period, would have had $26.10 by adding on, but now has just $8.94 for not adding on. So if you are considering late regging but not adding on, think again, it is instantly unprofitable.

In these examples the difference between adding on and not adding on for the chip leader is 14.5% of their highest possible equity. The difference for the short stack is 34.25% of their highest possible equity. The same 2,000 chips are worth much more to the short stacks.

Strategic considerations

We have taken a long time to get to how the diminishing value of chips actually impacts how you play a hand.

The biggest way in which the diminishing value of chips should change the way you play is that you should play much tighter with a short stack. This goes against the prevailing wisdom that you should gamble with a short stack to get yourself back in the game. It is true that you do not have as much time

to wait for a hand and should take the first profitable spot that presents itself, but the emphasis there is on profitable spots, not calling an all-in with suited gappers praying for a 60/40. When you are the shortest stack at the table, getting to the next pay jump is a massive boost to your overall equity, so don't throw it all away wildly.

Perhaps the biggest error you can make as a short stack is bleeding away chips with speculative hands. In the last example above if you have 1,000 chips worth $8.94 in equity and the blinds are 50/100, then calling a min raise with 67s is going to cost you $1.94, or 20%, of your equity if you just fold when you miss. However, you won't have much fold equity when you do miss, so that makes it an even bigger mistake. Each chip is worth much more to you when you don't have many, so you should play tighter, target other short stacks and change the type of hands you do play to more blocker/high suited card type hands. We'll cover this more in the next two chapters.

On the bubble of an EPT in Malta in 2015 I found myself short but reasonably comfortable with a bit less than 20 big blinds. It was one of the most torturous bubbles going on for hours. We were hand-for-hand, and the infamously slow Christophe Vogelsang found a partner in crime at his table taking equally long to act, so hands were taking over 20 minutes. I was getting information from a friend railing the live stream at home and knew that one player on another table was down to a few antes. I was on the feature table and mostly hoping to be dealt trash so I could quietly fold into the money when I picked up Aces. That I couldn't fold, particularly when the aggressive young Bosnian pro Alen Bilic was abusing the bubble opening every hand folded to him did so for the umpteenth time. I shoved, it folded quickly back to him, and he called. Even though I obviously knew I had the best hand I was rooting for the fold given the bubble situation.

Because it was hand-for-hand, we weren't allowed to turn over our cards or reveal our hands until all the other tables had completed their hand. While we waited my opponent asked "You got it?" to general laughter at the table. My immediate neighbour to the left Paul Berende chuckled "Of course he's got it", his immediate neighbour Dan Smith concurred, and Faraz Jaka pointed at me and said "My money's on that guy to have the better hand". I nodded and said "I have the best hand" and he replied "I'm two lower" so I

knew he had Queens.

After Christophe and his partner in crime had finished their hand, the dealer Sonia, a friend of mine, was given the go ahead to deal the flop. She seemed a lot more nervous than I was as she prepared to deal the flop. In these pressure cooker situations, I generally don't look at the cards, figuring it's not going to change them if I do and it's easier to remain calm and detached if I don't. You're always able to judge from the reaction of others at the table how it's going in any case. On this occasion I decided to watch Sonia's face for her reaction. As she dealt the flop nobody reacted at the table and she looked relieved, so I knew I was still ahead. She then had to wait what seemed like several minutes before the TV producer told her to deal the turn.

Things got confusing at this point as she initially looked relieved but then did a double take, and glanced back at both hands and then visibly winced. Unsure how to interpret this, I glanced at the board and saw they were now three hearts out there. A quick glance at Bilic's Queens quickly revealed he had the heart, and a quick glance back at my Aces confirmed I didn't, so he'd turned a flush draw. After another eternity they told Sonia to deal the river. She winced as she caught sight of the card but there was no reaction at the table. I looked at the river to see it was red, but not a heart.

There were a couple of interesting things about the hand from an ICM perspective. Later Bilic's backer, a friend of mine, said "I think Queens is a fold as crazy as that sounds, as I think your range is Aces and Kings because of the bubble". I agreed.

The other point of interest was that a lot of people criticised the short stack on the other table, an English schoolteacher by the name of Andrew Atkinson, for allowing himself to blind down to a few antes, saying that he should have shoved almost any two. This completely misses the point that even if he doubled, tripled, quadrupled or even quintupled his stack, it was still going to be a tiny fraction of a starting stack, so worth less than a buy-in in ChipEv terms. With the mincash being almost two buy-ins, pretty much all his equity was in maximising his chances of securing that, and the best way to do that was to keep folding and hope someone else bust. Andrew did end up securing the mincash after someone bust next hand, and when I played

with him later in a side event he said he was getting abuse from friends back home about keeping folding. But even though he was inexperienced (this was his first live event and remains his only cash to this day) he intuitively understood the ICM of the situation

When you have a big stack each chip is worth less to you. This does not mean you do not want a big stack, far from it. It means that you can play more aggressively with your chips because losing them is not as harmful. The fact that you cover other players means you can put them under pressure and you can play a wider range of more speculative hands. Having a big stack has a lot more utility than having a short stack.

As we have seen in the last chapter, how big or short your stack is is relative. If you have the chip lead with 100,000 chips you can really put the pressure on the 20,000 stacks but you stand to lose almost as much as they do when you make a big mistake against a 90,000 stack. If you are the short stack with 10 big blinds you cannot expect the chip leader to fold much, but a 20 big blind stack is not going to be happy when you shove on their big blind.

You want to be the big stack in the tournament, don't let this chapter make you think otherwise. However, the big takeaway from this chapter should be that a short stack is worth so much more than you think. A lot of otherwise good players have thrown away a lot of equity because they treat a short stack like they had already lost the tournament. In the next chapters we will discuss, amongst other things, how to maximise your impact as a short stack.

Key takeaways

- A short stack is worth more equity, per chip, because they have a much greater potential upside
- A large stack is worth less equity, per chip, because their upside is capped to close to whatever the first prize is
- Registering late is always profitable in an MTT, other than a PKO
- You should always purchase the add-on in a rebuy tournament,

not doing so costs you equity
- You should play tighter as a short stack because the chips are worth more to you
- You can play looser and more aggressive as the big stack because each chip is worth less to you

Things the pros don't know

- Shallow stack play is much more important to study in MTTs because each chip is worth more than it is in 100BB play

Chapter 5: Laddering vs. Playing for the win

I have a reputation for being tight because I am usually the oldest player at the table and some of my better known performances have been when I have managed to nurse a short stack seemingly from the bubble of a tournament all the way to the heads-up stage. Also because I am known for being a satellite grinder there is a running joke that my advice is just to "fold everything".

The reality is that some of my infamous short stack performances are outliers and I am just as capable of playing loose aggressive with a big stack. Perhaps people remember the short stack performances because it goes against their instincts that the way to play with a short stack is to gamble. They may also consider playing tight with a short stack as being 'weak'. Many times in my career a player has told me "you'll never win it like that" when I am playing tight with a short stack, and many times in my career those same players have ended up on the rail of the same tournament watching me at the final table.

Two fallacies manifest in players who don't understand ICM that are equally as harmful. The first is what I call the 'playing for the win fallacy' whereby a player acts needlessly aggressive to try to take down the whole tournament. The other is when a player ladders too much because of what the money means to them personally.

In the first fallacy players prioritise the trophy over the money and will often make what became known as 'ICM punts' where they throw away lots of equity playing as if it is a ChipEV winner takes all tournament. There is almost a contempt for ICM from these players.
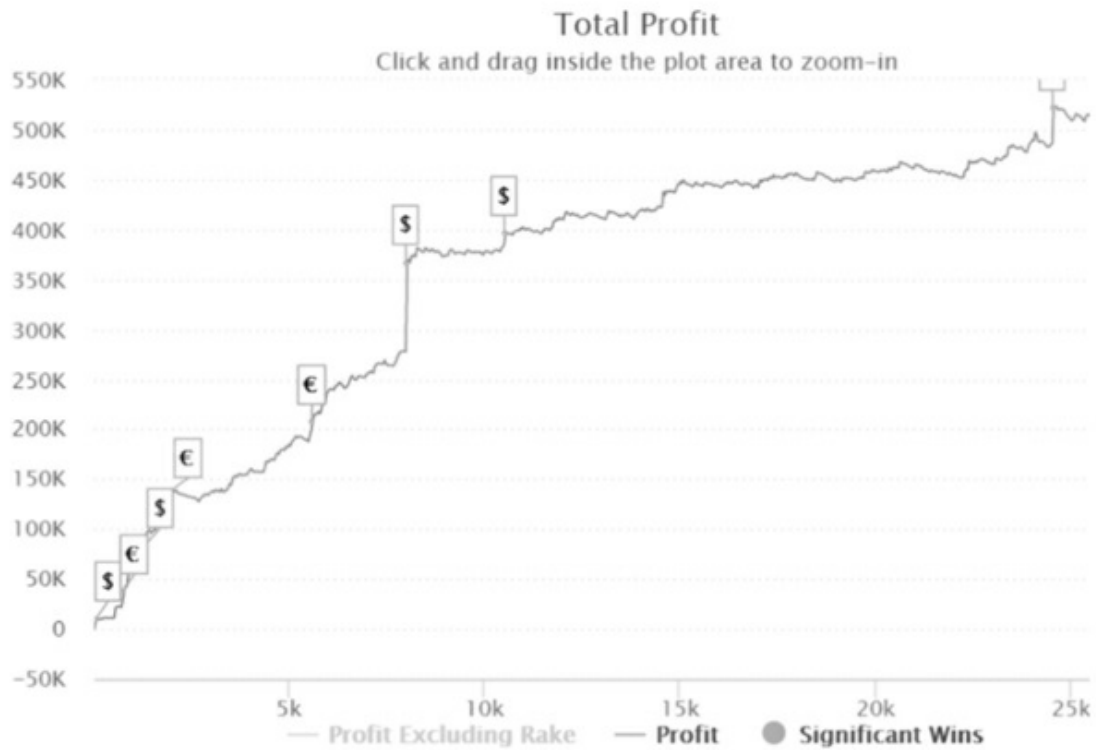
This fallacy came from the early days of poker where winning a single tournament might be enough to secure you sponsorship from PokerStars or Full Tilt. Now most WSOP Main Event champions don't even get sponsored, so there is very little additional equity for winning a tournament outright,

other than pride.

Bad tight players do better than bad loose players in tournaments. We all know a bad nit who has grinded out a lot of cashes, but a bad LAG will be losing hand over fist because they gamble when the equities are high. It is an optical illusion in poker. The biggest winners in a given year will all be loose. If you take the 100 best LAGs and 100 best TAGs, the LAGs will have the biggest winners but also the biggest losers. Everyone in the middle earning steady money will be TAGs.

Good tight players do better than good loose players in tournaments. You might see the LAG make headlines now and then when they win, but the good tight player has a steadier graph which looks like a straight line with little variance. I won't name names, but good loose players have graphs that are all over the place. My Chip Race co-host David Lappin said the best way to judge a career is to remove the player's three biggest scores, which often distort their rankings. When you do that you are left with the story of their career, day in and day out.

To give you an idea of what I am talking about, here is a screenshot of my PokerStars MTT graph:

Total Profit

Click and drag inside the plot area to zoom-in

— Profit Excluding Rake   — Profit   ● Significant Wins

And this is the graph of a very talented player who has been playing as long as me, whom I shall not name. He is at least as good as me, but has a much more loose aggressive style:

Total Profit
Click and drag inside the plot area to zoom-in

450K

300K

150K

0

-150K

5k   10k   15k   20k   25k

— Profit Excluding Rake   — Profit   ● Significant Wins

Similar overall results and much bigger single wins from my LAG peer, but my graph is slow and steady, his is all over the place. As you will see in the game selection chapter coming up, my career has not had extreme highs and lows, which has been much better for my mental game. LAG players can go through long losing periods (check out the 100k downswing over almost 10,000 tournaments in the middle of the graph above if you don't believe me, then ask yourself how that must have felt) and it is worth noting they tend to require staking or a much bigger bankroll to deal with that. So there is also a profitability argument for playing a tighter style as I have always played for 100% of myself, other than selling and swapping pieces in bigger events.

Speaking of which, I put my money where my mouth is where these players are concerned. I often do swaps when I get deep in a tournament to even out variance. My criteria for swapping when we are at the final few tables is how much a player understands ICM, and thus how tight they should be playing. I won't do swaps with LAG type players. I would rather do a 5%

swap with somebody who cut their teeth in the 180-man SNGs on PokerStars over Phil Ivey late in a big tournament. There are not many spots for brilliant plays at the end game stage, and when they happen they are often eye catching punts that got there. I'd rather swap with a player who isn't going to make a fundamental error.

When people watch the replays of final tables of major online events like the WCOOP, the most frequent comment is "nobody did anything special". TV poker has warped people's perception that final tables are about hero calls, in reality they are about making as few mistakes as possible.

The other big fallacy you see is when players overvalue laddering based on what the money means to them personally. They will be at the final table of a $22 tournament with $2,000 as the next payout and play too tight because they really want to secure that payout. They are thinking about $2,000 through the lens of their $22 buy-in, not where they are now in equity terms. The reality might be that their current equity is $1,400 and they have locked up $1,000, so the 'ladder' they are looking at is only $600 compared to their current equity, not $2,000.

One fallacy makes a player too loose, the other makes a player too tight. I have made some bold claims, particularly about playing too loose, so let's back them up with some examples.

Ladder or play for the win?

This is a final table where we have already made the money.

Player	Potential Payout	Stack	Equity
1	$49	20,000	$30.58
2	$32	16,000	$27.78
3	$18	12,000	$24.41
4	$12	10,000	$22.47
5	$9.50	4,000	$15.26

Player 4 has more equity than the 3rd place prize. Third place gets $18 and Player 4 has $22.47 in equity. Player 5 has a very short stack but still has more equity than the 4th place prize too, they have $15.26 in equity and 4th only gets $12. If you offered Player 5 4th place money in a casino chop, they would usually snap your hand off. In practice Player 5 will gamble too much, reasoning that their stack can barely be worth $10 given the 5th place payout is $9.50.

So what happens if Player 5 takes on Player 1 and loses?

Player	Potential Payout	Stack	Equity
1	$49	24,000	$33.61
2	$32	16,000	$28.62
3	$18	12,000	$25.34
4	$12	10,000	$23.44
5	$9.50	0	*$9.50 equity realised*

All four players have secured a pay jump of $2.50. However Player 4 has seen their equity jump just $0.97, Player 3 has seen it jump of $0.93, Player 2 increases their equity by $0.84 and Player 1 by $3.03. Player 1 increases by the most because they also gained 4,000 chips.

What if Player 5 won the hand instead?

Player	Potential Payout	Stack	Equity
1	$49	16,000	$27.34
2	$32	16,000	$27.34
3	$18	12,000	$23.95
4	$12	10,000	$22.01
5	$9.50	8,000	$19.87

Nobody has secured the next pay jump. Player 5 gains $4.61 in equity, Player 4 loses $0.46 in equity, Player 3 loses $0.45 in equity, Player 2 loses $0.44 and Player 1 loses $3.24.

If Player 5 gambled here, they are risking $5.76 in equity ($15.26-$9.50 guaranteed) to win an additional $4.61. That would give them a Bubble Factor of 1.25 and would require 55% equity to get it in. That is quite wide, but probably a lot tighter than most people think a short stack should be getting it in. If Player 1 was pushing a wide range (22+, A2+, K8o+, K2s+, Q8s+, Q9o+, JTo+, J9s+) here Player 5 could call with a range similar to 66+, ATo+, A9s+ which is a lot tighter than most players would imagine. Player 5 would still have to fold most of their Aces, pairs lower than 55 and all their broadway.

The other noticeable thing here is how little the equities shift between the players not in the hand. The next pay jump is just an extra $2.50 but the difference between the equities is $1.43 for Player 4, $1.39 for Player 3 and $1.28 for Player 2. Player 4 and Player 3 have higher equities than the mincash they would currently get if they finished in the position they were currently in, Player 2 has lower equity because of that punishment factor imposed on the bigger stacks.

Going back to the original example, what if Player 4 went all-in against the chip leader instead? Player 4 is perhaps the most motivated to 'ladder' and let Player 5 bust to secure them a pay jump. This is what would happen if Player 4 lost:

Player	Potential Payout	Stack	Equity
1	$49,	30,000	$37.23
2	$32	16,000	$29.79
3	$18	12,000	$26.56
4	$12	0	*$9.50 equity realised*
5	$9.50	4,000	$17.42

And this is what happens when Player 4 wins (Player 4 and 1 just swap places):

Player	Potential Payout	Stack	Equity
1	$49	10,000	$22.47
2	$32	16,000	$27.78
3	$18	12,000	$24.41
4	$12	20,000	$30.58
5	$9.50	4,000	$15.26

Player 4 loses $12.97 in equity when they lose ($22.47-$9.50 realised equity) and gains $8.11 extra equity when they win. That gives them a Bubble Factor of 1.6, meaning they have to call with 62% equity to break even. That is tight and much tighter than the short stack has to call with, but perhaps not as tight as some players would imagine. If the chip leader was pushing a wide range (22+, A2+, K8o+, K2s+, Q8s+, Q9o+, JTo+, J9s+) here Player 4 could profitably call with 99+, AQo+, AJs+. I think some grinders would assume they could only call with AK, QQ+ in a spot like this.

It is true that the short stack can get it in wider compared to the rest of the table, but they still have to fold a lot of strong and pretty looking hands they might deem 'gamble worthy'. This is because the short stack has a lot more equity than most players realise.

It is also true that the other players are incentivised to fold when a short stack is present, but they don't have to be a complete nit. This is because they should base their decisions on their current equity, not based on what the actual money amounts mean to them. If the chip leader is pushing a wide range then the rest of the table can profitably call them wider too.

How to play for the win when you can't play for the win

We have to play tighter as the short stack, but we also have to accumulate chips. These two ideas seem at odds with each other. In order to accumulate chips we have to risk being eliminated. Is it just a case of folding your stack away until you find a big hand?

It's not about waiting for a better spot, it's about taking *different* spots. Let's say we are Seat 4 where we find ourselves in the tricky spot of needing to accumulate chips but also not wanting to bust out with such a short stack at the table. Let's go back to Bubble Factors:

	Seat 1 (20k)	Seat 2 (16k)	Seat 3 (12k)	Seat 4 (10k)	Seat 5 (4k)
Seat 1 (20k)		1.52	1.29	1.22	1.07
Seat 2 (16k)	1.83		1.37	1.26	1.08
Seat 3 (12k)	1.68	1.6		1.34	1.09
Seat 4 (10k)	1.6	1.53	1.46		1.1
Seat 5 (4k)	1.25	1.22	1.19	1.17	

Seat 1 has a very low Bubble Factor against Seat 4, they could call with 55% equity to be break even. Seat 5 is so short stacked that they could call with 53.9% profitably against Seat 4 (a reminder that they get to call a tiny bit wider than the big stack because calling and winning would make Seat 4 the most likely player to bust and thus help Seat 4 realise more equity). If you were Seat 4, the player you want to target is Seat 3 who has just 2,000 chips more than you. They would require 57.3% equity to be able to call you, so if everyone was playing GTO, Seat 3 would have to fold the most hands to you.

Two other factors are important when trying to accumulate chips. Position is perhaps the single most important factor when deciding whether to shove as one of the shorter stacks. The later the better. If you are the Button you only have to worry about two other players, which means you can comfortably push a wide range knowing you will get a lot of folds and get called by a wider range when you are called. We will look at how valuable pushing from late position is in the second half of the book which looks at practical examples.

The other important factor is having blockers in your hand. When you push with an Ace or a King in your hand you remove the two of the most likely cards that will call you. We are going to explore this in the next chapter, but until then, you are often better off pushing with an Ace with a bad kicker than you are with a small pair in the late stages of a tournament because of this card removal effect.

When you are one of the shorter players at the table, your checklist should be to:

1.   Only call with strong hands
2.   Push a wider range in late position, ideally with blocker hands
3.   Target the players who would be most hurt by you and avoid the players with nothing to lose

Taking skill into the equation

ICM does not account for skill and all of the examples so far in this book have assumed equal skill amongst the players. We will discuss working out your equity including skill edge later on, but until then skill does come into our decision making when it comes to laddering and 'playing for the win'.

There is a general consensus that a good player should pass high variance profitable spots because they can exploit more profitable spots later on without having to flip. Likewise a weaker player should gamble a bit more because it is their best shot at securing a bigger payout and/or busting a superior player.

If you use solvers, Benjamin 'bencb' Rolle came up with a useful heuristic for when to pass profitable spots. In a solver you can see how much each hand would make in big blinds or percentage of the prize pool. Ben suggested that if a hand makes more than 10% of what Pocket Aces would make, you cannot fold it. If Aces would make 2BBs on average and AQo would make 0.5BBs you cannot pass it. If it KQo makes 0.1BBs on average you can easily pass it. You only get Aces one in 200 times, any hand that does what Aces can do 10% of the time is too good to pass.

There are other factors that could lead you to folding profitable spots. Stack distributions for example - if you are enjoying a comfortable lead over the table and a marginally profitable spot could leave you short, you can pass it. If you have position on the chip leader or the best player, you can pass some marginal hands because that is a very fortuitous spot to be in. If there is a particularly bad player at the table with lots of chips, they will provide you with a lot of good situations that would justify folding a close one against

another player. If the tournament structure was slow, you can pass some marginal spots knowing you have time on your side.

If you were the worst player at the table and/or out of position to the best players, you should take any profitable spot you can. If calling and winning would eliminate the best player at the table that's another reason not to pass a profitable spot. If the tournament is a fast turbo structure then you should never fold a profitable spot because you will blind away waiting for a better one.

There is also an argument for taking a minus EV spot if you are outmatched. There was a famous example when Chris Ferguson was heads-up against TJ Cloutier in the World Series of Poker Main Event. Ferguson five bet called with A9 which a lot of people criticised. Ferguson said he knew he was behind, he knew he was not getting the right price, but he knew Cloutier was better than him and if he folded Cloutier was going to have the chip lead and grind him down. Even though he only had 30% it was a 30% chance to win the tournament, which he felt was better than his chances if he folded into a chip deficit.

The only time I felt myself in this situation was when I went to the WSOPE in Berlin and entered the Six Max tournament. I had never played a Six Max bracelet event before and didn't realise how tough the fields tended to be. I think I was one of the worst players in the tournament and I don't think that has ever happened before. I completely flipped my strategy and ramped up the variance. If I got dealt AK preflop I would be 3-betting, 5-betting, 7-betting - anything I could do to get my chips in. If I had JJ or QQ, same deal, no small ball element. I was pushing all the marginal spots post flop and eventually came 9th in the tournament because the players I was up against were doing what I would normally do, which was passing close spots.

There is a famous thought experiment, if you had to play the best heads-up player in the world, what odds would you need to play them? If the stacks are shallow, 2-1 is close to what you need. If you go all-in every hand, your opponent will lose 1/3rd of the time. He will have to fold a lot of hands and if he gets it in, it will be a 60/40 a lot of the time. It's clearly incorrect to shove without looking at your cards, you make the other guy's strategy very easy.

But you will still win more than you would grinding it out against somebody better than you.

How big of a negative edge should you take? It's hard to say. If five are left and you are 2/5 in chips, you are probably better to hold back and ladder. Even if you are the shortest, you will still find very good spots. One benefit of being short stacked is you can profitably shove more hands. If you have 5BB you can shove 75% of hands profitably, do you really need to shove more than that?

If a close call would make you the chip leader you can justify making the call. If you are the worst player and 5/5 you are coming 5th most of the time. If you are the worst player and you are 1/5 you won't win much, but you will come 2nd or 3rd a lot.

Players who don't want to understand ICM might read this chapter and think it is a manual for mincashing and never winning. I can understand why some players might read this and force themselves into a nitty stalemate where they can only play Aces and Kings. That is not the correct adjustment, we have given you strategies for accumulating chips as a short stack and also when to not let the relative size of the payouts cloud your judgement.

However, you do have to recognise that when you are a short stack you are playing a different game to a medium stack, and when you are a medium stack you are playing a different game to a big stack. We will be looking at lots of hand examples that showcase the difference between necessary playing styles in the practical section of this book.

Key takeaways

- Don't factor in what the pay jumps mean to you personally when 'laddering', instead think about your current equity and the equity you have realised
- If you have a skill edge you can pass marginally profitable spots
- If you are a skill underdog you have more incentive to take high variance profitable spots

Things the pros don't know

- Short stacks should not gamble, they have more equity than they might realise
- Short stacks should target other short stacks, in late position with blockers

Chapter 6: ICM changes the shape of your range

We have seen that ICM forces us to play a tighter range of hands than a typical ChipEV pot odds decision. This is because we always risk more equity than we stand to gain in a tournament hand, because of the payouts. Most players understand this on some level but think that playing a tighter range is the only adjustment they need to make. They think that instead of playing 25% of hands from the Hijack maybe they should play 20% of hands. It's not just about playing fewer hands it is also about changing the *types* of hands you play. Some hand types do better in ICM heavy situations even if they are technically weaker than other hands you should throw away.

You will see this extensively in the practical section of this book but let's jump in with a single example that highlights what we mean. This is a final table situation with six players remaining, you can see the potential payouts and equities below:

Player	Potential Payout	Stack	Equity
1	$3,233	54,000	$2,155.66
2	$2,334	42,000	$1,968.73
3	$1,687	32,000	$1,772.56
4	$1,221	22,000	$1,521.47
5	$884	18,000	$1,399.17
6	$641	12,000	$1,182.42

The blinds in this example are 500/1,000 with a 100 ante. This is the table makeup at the start of the hand:

Position	Stack
UTG	32,000
HJ	22,000
CO	42,000
BU	18,000
SB	12,000
BB	54,000

And before we get into the simulation, these are the Bubble Factors for each player against each other:

	UTG (32k)	HJ (22k)	CO (42k)	BU (18k)	SB (12k)	BB (54k)
UTG (32k)		1.42	2.04	1.3	1.17	2.15
HJ (22k)	1.73		1.81	1.41	1.22	1.89
CO (42k)	1.61	1.32		1.24	1.14	2.33
BU (18k)	1.63	1.53	1.7		1.24	1.76
SB (12k)	1.43	1.35	1.47	1.31		1.51
BB (54k)	1.43	1.24	1.74	1.19	1.11	

Now let's look at a single hand example, we have picked the Cutoff who has 42,000 chips, the second biggest stack at the table. The first two players have folded and we are left with three players left to act, two short stacks and the chip leader as the Big Blind.

Before we look at the ICM ranges, this is what Poker Snowie would advise we do if we had the same table makeup but no ICM was involved, so it was essentially a cash game or the start of the tournament:

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	**71%**	**54**
AJo	KJo	QJo	JJ	JTs	J9s	J8s	**95%**	J6s	J5
ATo	KTo	QTo	JTo	TT	T9s	T8s	**61%**	T6s	T5
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	**7%**	85
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	**97**
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	5
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54
18%	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52

All the hands that are greyed out above Poker Snowie advises we min raise, the hands that are bolded with a percentage next to them we should only play a small part of the time, so 56s we raise 97% of the time and A3o we raise 18% of the time.

This is a pretty linear range of 37.10% of hands which we would write as:

33+,A2s+,K2s+,Q6s+,J7s+,T7s+,97s+,86s+,76s,65s,A3o+,K9o+,Q9o+,J9

Now this is what MonkerSolver advises the Cutoff does, given the ICM of the situation. This simulation we didn't do ourselves, we got it from the excellent bbzpoker.com who kindly said we could reuse it:

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o

This is much tighter for obvious reasons, we can now only play 26.55% of hands because of ICM, perhaps most notably our Bubble Factor of 2.33 against the chip leader.

If we wrote out the range we would write: 55+,A2s+,K4s+,Q8s+,J8s+,T8s+,98s,A7o+,A5o,KTo+,QTo+,JTo

No surprise we can play 12% less hands, at this point that is ICM 101, but look at the hands we throw away. We have mucked 33 and 44 which most people would assume would be quite playable against just three players in late position, however we have kept K4s which most people would assume is a terrible hand because of kicker problems. We have removed 56s and 67s, two hands that can hit flushes and the top or bottom end of a straight, but we have kept Q8s and J8s - a three gapper and two gapper respectively.

If we had purely reduced our range merely by the percentage of hands from 37% to 26%, keeping the otherwise linear shape, our range would look like this:

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o

That range is 33+,A2s+,K7s+,QTs+,JTs,A3o+,KTo+,QTo+

ICM doesn't do that. Not only does ICM force us to reduce the number of hands we play, it changes the types of hands we play. This is why we have presented the ranges in hand grid format because it helps to crystallise this effect. ICM changes the *shape* of the hand range in the grids above. The last two examples have the same percentage of hands in them, but in the ICM example smaller pairs and weaker broadway hands are replaced with more suited broadway hands, even when they have gapper or kicker problems. I think most people would be surprised that J8s or K4s get included ahead of JTo in the last two examples.

Most of you will know by now that you have to play tighter when ICM is significant, but why does the shape of the range change? Why do suited high cards go up in value and why do small pairs, unsuited broadway and suited connectors go down in value?

One way to get that answer is to look at the kinds of ranges you will be up against when you do open in this spot. First of all, let's look at how the Button, who has 18 big blinds, responds when we open. The Button covers the Small Blind but is well covered by us and the Big Blind. This is how Poker Snowie suggests they respond when ICM is not a factor:

AA	AKs	AQs	AJs	ATs	75%	11%	29%	A6s	22
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J
60%	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	9
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	8
A7o	K7o	Q7o	J7o	T7o	97o	87o	93%	76s	7
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	6
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	5
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	5
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	5
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	5

The dark shaded squares are reraises all-in, the lighter shaded squares are calls, the squares with a percentage in are mixes of the two. Overall this is a tight range of 15% of hands where we mostly shove for value and flat with speculative hands in position.

This is the same range when ICM is a factor:

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o

A tighter range again, this is just 11% of hands, but a very different shape and response. First of all, there are no calls, every hand the Button plays is a shove. This is because of their stack size, with 18 big blinds it's more profitable to shove than to make an inducing bet.

With 18 big blinds they can still put a lot of pressure on the other stacks, so they shove their whole range to maximise fold equity. Most of the Ax offsuit hands are gone, ATo is folded but KTs and QJs are included. A3s-A5s are also in the range despite stronger kickered Aces not being there. Most interesting of all 44-66 are in the range, despite ICM not liking small pairs and 77-88 not being there. Why is this?

What solvers like Monker Solver have shown us is that ICM likes blockers and hands that can improve. Hands like QJs, KTs and A5s all block the AA, AK, AQ, KK, QQ, JJ, TT hands that would call an 18 big blind shove. In this example the Cutoff's calling range of that 18 big blind shove is 99+, AJs+, AQo+.

There are 16 combinations of AK, 16 combinations of AQ, including four combinations of each suited combination AKs to AJs and six combinations of each of the six pocket pairs 99-AA. That is 72 combinations of cards that can call a Button shove. When the Button has A5s that takes the AK & AQ combos down to 12 each, the AKs to AJs combos down to three each and the AA combos down to three. That brings the potential number of calling

combos down to 60, which is a 16% decrease in the number of hands that can call. With KTs that number goes down to 67 combos and with QJs it goes down to 66 combos. Having a blocker or two in your hand greatly improves your odds of getting folds when the calling ranges are so tight.

However, we will get called some of the time, so we need a hand that can improve too. A5s or QJs doesn't do great when it makes a pair after being called, but both hands can make a straight or a flush. A hand like ATo seems like a stronger hand but it is missing from the range because it is usually dominated and rarely makes a straight.

The presence of 44-66 might seem odd here but it follows a similar principle. When called they sometimes can win without improvement in a coin flip against AJ-AK hands, when they are behind they can make sets and crucially they counterfeit/block wheel straights made by the Ax hands. These small pairs either stop A2345 straights from happening or they make a 23456 straight that beats them. That's why they are in the range yet 77-88 are not. This is something of a rarity and only applies when the calling range is Ax heavy, so don't follow this example strictly as it won't come up often.

ICM also likes hands that can improve on later streets. We open a hand like K4s because it blocks AK/KK hands, we can make a strong top pair and we can make a strong flush. The solvers also like hands like this because they allow us to make more natural bluffs. If we have K4 of hearts and the flop is 2h8sTd we can bet this flop and if we are called can bet again if the next card is a heart, giving us a flush draw. Fold equity is very important in ICM severe situations so anything that allows us to profitably bluff more streets is ranked higher than, for example, a small pair that really only has two outs on most boards. These suited high card hands can also make strong hands by the river too, which is why they make good semi bluffs.

Let's now assume that Button and the Small Blind have folded leaving just the Big Blind, who is also the chip leader and the only player who can bust us. We have a Bubble Factor of 2.33 against them, which is the highest Bubble Factor at the table. Again, this is what the solvers suggest the Big Blind do in a non-ICM spot:

AA	AKs	AQs	AJs	ATs	**17%**	**15%**	**12%**	**9%**
AKo	KK	**96%**	KJs	KTs	K9s	K8s	K7s	K6s
AQo	KQo	QQ	**45%**	QTs	Q9s	Q8s	Q7s	Q6s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s
38%	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s
A7o	K7o	Q7o	J7o	T7o	97o	87o	**61%**	76s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	**71%**
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o

Once again, the dark grey boxes are shoves and the light grey boxes are calls. No surprises to see the chip leader can call most of their hands, not only do they have the chip advantage they can also close the action as the Big Blind and are getting a great price to do it. This is what they do in an ICM influenced spot:

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s
38%	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o

They can play an even wider range of hands and reraise a very small percentage of them. In this example the chip leader raises their strongest hands for value and their weakest offsuit Aces and Kings as bluffs. This is to get a balance of bluffs and value, it also means their bluffs have blockers so they will work more often.

Why is it that the chip leader can play more hands than in a non-ICM scenario? It is precisely because they can exert more pressure on the Cutoff because of ICM. The Cutoff has to be tight because they risk elimination, the Big Blind can be loose because they do not. Each chip the chip leader has is worth less to them than for the other players, so they can be looser with them. As you will see in the post flop section, the player who is covering can be much more aggressive post flop, even without range or positional advantage.

This highlights the last reason why the shape of your range changes because of ICM and that is that stack size differences matter. In the non-ICM examples we are really dealing with effective stack sizes, so when the Cutoff (42 big blinds) plays against the Button (18 big blinds) then both players are effectively playing an 18 big blind strategy. When ICM plays a role the differences between the stacks matter. Vulnerable stacks have to play tighter ranges and dominating stacks can play loose ranges.

Let's quickly look at one more example and that is how ICM impacts

calling ranges. This is the same final table as before but the chip leader is now under-the-gun and has opened. This is the table makeup:

Position	Stack
UTG	54,000
HJ	32,000
CO	22,000
BU	42,000
SB	18,000
BB	12,000

When ICM is not a factor, below are the opening ranges and how each player would respond if it was folded to them after UTG has opened. Blinds are 500/1,000 with a 100 ante.

ChipEV Opening Ranges	
UTG (54,000)	18.2%, 66+ A4s+ A8o+ K9s+ KTo+ QTs+ QJo JTs
Response Ranges	
HJ (32,000)	Call 8.6%, TT-66 AQs-A7s AQo-ATo KTs KQo QTs Shove 4.7%, JJ+ 55 AKs A5s-A4s AKo KJs+ QJs
CO (22,000)	Call 8.5%, 88-66 AJs-A7s A5s-A4s AJo-A9o K9s KJo+ Shove 7.6%, 99+ 55-44 AQs+ AQo+ KTs+ QTs+ JTs
BU (42,000)	Call 14.9%, JJ-44 AQs-A2s AQo-A9o KJs-K9s KJo+ Q9s+ QJo JTs Shove 3.3%, QQ+ AKs AKo KQs
SB (18,000)	Call 39.7%, 66-55 ATs-A2s AJo-A2o K9s-K2s K8o+ Q9s-Q2s Q8o+ J9s-J3s J8o+ T6s+ T8o+ 95s+ 98o 85s+ 74s+ 64s+ 53s+ 43s Shove 9.0%, 77+ 44-22 AJs+ AQo+ KTs+ QTs+ JTs
BB (12,000)	Call 90.7%, 33-22 ATs-A2s AJo-A2o KJs-K2s K2o+ Q8s-Q2s Q2o+ J9s-J2s J2o+ T8s-T2s T2o+ 9x-3x Shove 9.3%, 44+ AJs+ AQo+ KQs Q9s+ JTs T9s

This is what the ranges would look like in an ICM example at that final table:

ICM Opening Ranges	
UTG (54,000)	Open 13.6%, 66+ AQo-A8o KTs+ KTo+ QTs+ Shove 5.7% 55-44 AK A9s-A2s A5o JTs
Response Ranges	
HJ (32,000)	Call 9.8%, KK-77 A9s+ ATo+ KTs+ KQo Shove 1.9%, AA A5s-A2s
CO (22,000)	Call 10.2%, QQ-77 AJs-A9s ATo+ KJs KJo+ QTs+ Shove 3.3%, KK+ AQs+ A5s-A2s KQs
BU (42,000)	Call 13.2%, KK-55 AQs-A9s A9o+ K9s+ KJo+ QTs+ JTs 3.8%, AA AKs A8s-A2s A5o
SB (18,000)	Call 40.2%, JJ-22 AJs-A3s A2o+ KTs-K2s K9o+ QTs-Q3s Q9o+ J6s+ J9o+ T6s+ T9o 95s+ 98o 85s+ 87o 74s+ 64s+ 53s+ Shove 3.6%, QQ+ AQs+ A2s KJs+ QJs
BB (12,000)	Call 95.0%, TT-22 AJs-A2s AQo-A2o KTs+ K8s-K2s K2o+ Q8s-Q2s Q2o+ J9s-J2s J2o+ Tx-3x Shove 5.0%, JJ+ AQs+ AKo K9s Q9s+ JTs

These are imperfect examples for reasons we will explain in the practical section of this book, but the broad strategic adjustments hold up.

In the non-ICM example the larger stacks all set mine with small pairs and call with suited connectors T9s upwards. In the ICM example the pairs they call with are much stronger and the suited hands are all broadway.

The Big Blind plays 100% of their range in both examples, the interesting thing is the split of the range. In ChipEV world they basically 3-bet their strongest hands, almost all their pairs and biggest Aces. In ICM world their 3-betting range is mostly made up of their suited Ax hands. This is because these are blocker hands which make folds more likely. It's a similar story for the Small Blind, they play almost half their hands in both situations, but in the ChipEV example they 3-bet three times as much and with all their pairs and big broadway hands, in the ICM example it's mostly big pairs and Ax/Kx blocker hands.

It is more stark for the bigger stacks. The Hijack 3-bets JJ+, AK and some

suited Ax/Kx as bluffs in the ChipEV examples. Their ICM 3-betting range is exclusively made up of hands with Aces in them. You can see a similar thing for the Button. The reason for this is because when ICM is a factor, it is a disaster for the 2nd and 3rd place stacks to take on and lose to the chip leader, so as a result they need a blocker in their hand to even consider it.

Generally speaking the ranges have all got tighter in these examples because of the serious threat of elimination. However, the same broad changes to the shape of the range remain - small pairs and speculative suited connectors go down in value, blocker hands go up in value.

We are going to look very closely at the shapes of ranges and what influences them in the practical chapters of this book. Until then, it really helps to start visualising hand ranges rather than just memorising the list of hands. It makes them easier to remember and also allows you to be more reflexive when you are in situations where you know you need to tighten or widen a range, but are not sure how.

Key takeaways

- Blockers go up in value when ICM is a factor because of card removal
- Suited high cards go up in value, offsuit broadway, small pairs and suited connectors go down in value, when ICM is a factor
- ICM makes fold equity more important, especially for shorter stacks
- Who covers who influences the shape of your range
- Visualise the shapes of ranges rather than trying to memorise the list of hands you can play

Things the pros don't know

- Solvers like hands that can profitably bluff on several streets and make strong hands by the river
- Chip leaders can defend widely because they can put pressure on post flop

Chapter 7: Deal making

Most people's first introduction to ICM is when they make the final table of a tournament and a deal is proposed. The tournament director will emerge with an iPad and invariably will shock and offend one of the bigger stacks who thinks they deserve more of the prize pool. That is an apt introduction given that the formula for ICM as we now know it was first proposed purely as a deal making solution. It was only much later in the modern game that ICM was used to inform strategic decisions.

It is much more important to understand ICM from a strategy perspective than it is for deal making, but some of your biggest single monetary decisions in poker will be deals. It is very important to understand the impact ICM has on deals so that you do not get pressured into a bad one when you make a big final table.

A deal is when you and the rest of the participants agree to redistribute the remaining prize pool in a way you find more agreeable. Some sites and live tours do not allow deals (though private ones happen behind the scenes). Some tours like the EPT actually live stream the deal making process and many poker sites have transparent deal making built into the software. A lot of sites and tours will allow deals as long as a minimum amount is still left to play for, so that the tournament will play down organically to a winner.

There are four typical deal types in poker. A 'Chip Chop' deal is when you award a percentage of the prize pool based literally on the percentage of chips each player has. So if there was $1,000 left in the prize pool a player with half the chips in play would get $500.

There is the ICM deal where the players are paid out based on the equity value of their stack. This is the most common form of deal.

Then there are custom deals where typically one player has argued their skill advantage should yield them a higher prize, in exchange for the rest of the table being awarded flatter payouts. You often see this in tournament reports when 3rd place might bag a bigger prize than the eventual winner.

Sometimes custom deals might be a little more à la carte, for example if one player really wants the trophy for vanity reasons and is prepared to take a lower prize to secure it.

Finally, there are saver deals which happen on the money bubble and they award the 'Bubble Boy' their buy-in back or a mincash. Typically the money for that gets taken off the first prize.

Let's look at an example deal to explore the merits of each further. This is a $10 final table that has got down to five players and this is the equity of their stacks:

Player	Potential Payout	Stack	Equity
1	$490	200,000	$305.76
2	$320	160,000	$277.81
3	$180	120,000	$244.13
4	$120	100,000	$224.68
5	$95	40,000	$152.62

There are 620,000 chips in play and $1,205 in the prize pool, the top prize is $490.

Player 1 has 200,000 chips or 32.26% of the chips in play. They are most likely to win the $490 first prize but anything could happen. If they were to take an ICM deal right now they can lock up $305.80 but if they played on and had a bad run of cards they could bust out next with just $95. An ICM newbie would probably look at this deal and think that the chip leader was getting a terrible deal, but as we now know, the more chips you have the less each one is worth. If they decided to take a chip chop deal they could take $388.71 which looks a lot more favourable.

Player 5 is the short stack with 40,000 chips, or 6.45% of the chips in play. They are most likely to bust next for an already locked up mincash of $95. If they were a new player in a live tournament they might be shocked to learn their stack was worth $152.60 and would likely bite your hand off to agree to an ICM deal. Whether they are ICM savvy or not, they would not be willing to stand for a chip chop deal because that would get them $77.74, which is actually worse than the mincash they have locked up.

Player 3 is in the middle with 120,000 chips. If they held their position they would win $180. If they did an ICM deal they could lock up $244.10. If they did a chip chop they could bag $233.23. Whether they did an ICM deal or a chip chop, they would be over the moon because they would be securing quite a significant portion more than their current standing would get them if it played out and they finished in 3rd.

In practice a chip chop deal might first give everyone at the final table the next guaranteed mincash, in this case $95, then chip chop the remaining prize pool, in this case $730, according to chip stack. That would look like this:

Player	Stack	Chip Chop inc mincash
1	200,000	$330.42
2	160,000	$238.50
3	120,000	$236.26
4	100,000	$212.75
5	40,000	$142.08

That brings things a lot closer to ICM but as you can see the chip leader is the only player to benefit. Everyone else takes a small hit to ensure the chip leader gets a $24.62 premium on their ICM value. If the leader had an even bigger advantage they would potentially be able to secure a better than official first place prize, if they did a chip chop.

In practice a bespoke deal that might have suited all parties is if Player 1 got $350, Player 2 got $300, Player 3 got $230, Player 4 got $200 and Player 5 got $125. That way the chip leader got an amount more than ICM, the short stack got better than a mincash and the other three players secured a decent payout without letting variance deal them a bad hand.

This example highlights how there is no perfect deal that suits everyone. By their very nature deals are a compromise where you sacrifice the potential to win a higher amount for the security of locking up an amount you are happy with.

Of all the deal types, chip chops make the least sense in a tournament. By now you have seen how much more valuable a short stack is and how easily they can turn things around. Chip chops essentially ignore the payout structure of the tournament which should have influenced every decision in the tournament up until that point. A chip chop deal makes more sense if you had been playing a winner takes all tournament where a ChipEV strategy was how everyone was playing.

You can overcome a lot of common deal mistakes with a simple reframe of the situation. When you reach the final table you are no longer in the same tournament you entered. You are in a new tournament playing for new prizes, minus the amount you have already locked up.

Why deal in the first place?

At this point we should probably explore why we do deals at all, rather than play on for the biggest possible prizes? We deal to take variance out of the equation. We have all been in situations where we have a big chip lead with five players left only to take two coolers in quick succession and bust out in 5th. When you find yourself at the bigger final tables in your career, the ones that don't come along all that often, you deal to lock up a big cash and not leave it to the poker gods. If the deal is a good one, of course.

In our example Player 1 will win 32.3% of the time and come 2nd 27.4% of the time according to ICM and assuming all players have equal skill. 59.7% of the time they will win a prize greater than the $305.80 they would get in an ICM deal, but 40.3% of the time they would get less. 4.9% of the time the chip leader ends up exiting in 5th, which is one time in 20. You have probably been in enough 60/40s at the tables to know how cruel variance can be in these spots. Remember you are playing a different tournament for a lot more equity at the final table and the big ones come up rarely. Dealing is a way of ensuring variance doesn't hit you when it matters the most. Just to illustrate how easily fortunes can flip around, this is what the finish distribution would be at the example final table above (you can do these calculations yourself at **www.primedope.com**):

Player	1st	2nd	3rd	4th	5th
Player 1	32.3%	27.4%	21.4%	14.0%	4.9%
Player 2	25.8%	25.2%	23.0%	18.1%	7.8%
Player 3	19.4%	21.0%	23.0%	23.5%	13.2%
Player 4	16.1%	18.3%	21.5%	26.4%	17.7%
Player 5	6.5%	8.1%	11.1%	18.0%	56.4%

It's worth noting while you look at these distributions that the chance of each player winning the whole tournament is their exact percentage of the remaining chips in play, which is how ICM works out the overall winner distributions. The chances of each player coming in all the other positions is much more complicated. If Player 1 doubles their stack they now have a 64.6% chance of winning the whole tournament, but their equity does not double: in fact it won't increase much at all because of the chipleader's punishment factor.

I like to deal when the final table is paying out large amounts, relatively. If 1st place pays $20,000 and I can lock up $15,000 without variance coming into the equation, I will. Paradoxically I usually also deal at the smallest final tables I make where the payouts are relatively small. If my equity (factoring in my edge) at a small final table is $500 and somebody offers me ICM of say $450 I'll snap their hand off. This is not to even out variance but because I value the time I save. If I can end a small stakes final table taking a small equity hit and save potentially three hours, I'll do it. If it's a small side event at a live festival I'm even more keen if it means I can get back to my hotel room to have an early night.

Any time is the time to discuss a deal. There was a famous case with Dan Harrington at the WSOP final table where he offered everyone a deal after every single elimination at the final table. It made sense, he argued very rationally that this was the most equity they all would ever play for. It makes a massive difference when you have a sample size of one, he did what I said, he recognised it was a new tournament. They were no longer in a $10,000 tournament - it was more like a $200,000 tournament. He was an investment advisor and he even sweetened the deal by offering everyone free investment advice. He got turned down every time.

Once the money becomes significant to you from a variance point of view, that is when a deal should be entertained. Online players usually understand this a lot better than live players because they play more volume and in more tournaments with huge fields. They know that how they do in their biggest final tables will make a massive difference to their year.

To see why they might be more willing to deal, consider this hypothetical example of Jane, an online player who plays 10,000 tournaments in a year, average buy-in $20, long term ROI 20%. That means that in an average year she can expect to make $40,000.

Let's assume she makes the final table of the Sunday Million. These are the stacks, payouts and ICM value of each stac:

Seat	Stack	Potential Payout	ICM Value
1	20,000,000	$109,974	$61,804
2	17,000,000	$79,473	$57,384
3	14,000,000	$57,434	$52,264
4	12,000,000	$41,507	$48,364
5	9,000,000	$29,996	$41,565
6	7,000,000	$21,678	$36,210
7	6,000,000	$15,666	$33,213
8	4,000,000	$11,322	$26,394
9	2,000,000	$8,182	$18,033

Let's say Jane is Seat 5 with an average stack, worth $41,565. Should she agree to an ICM chop if it's offered? If your answer is no, remember that this is effectively a new tournament where she's investing $33,183 (her current equity minus what she's guaranteed) to enter a one table tournament with $101,792 for first (top prize minus the min cash). Does that seem like a wise decision for someone who earns $40k a year?

If your answer is still yes, ask yourself what if instead Jane were a school teacher who earned $40k a year, and once a year she drove to a casino and used $33k of it to buy into a poker tournament? Would you still think that was wise, or would you be one of her friends giving her numbers for Problem Gambling hotlines?

We can take this example further to look at whether things change if Jane is the short stack in Seat 9. Her ICM might 'only' be $18k, and many players simply won't deal in these spots where they are 'only' locking up an additional $10k. But again, the important consideration here is would she cough up $10k to play this tournament (as the short stack), and if she knows anything about bankroll management, the answer is clearly no. Remember her ABI is $20, so $10k represents a 500 buy-in shot where the odds of a profit are against her (the short stack will bust in 9th more often than any other spot).

Now let's switch to thinking about the situation when Jane is the chip leader in Seat 1. Her equity now is $61,804, so she's essentially buying into this new tournament for $53,622, almost one and a half times her average income. Put like that, it immediately sounds insane, yet a lot of people simply

won't deal when they're chip leader on the false assumption that they have less risk when they have more chips, when in fact the chip leader is the one risking the most equity.

Yes, she'd have to be very unlucky to bust in 9th, but believe me, it happens. I once went back to a High Roller in France as the chip leader with 17 left. My roommate for the trip was pouring a bowl of cornflakes when I left, and promised he'd be along for the rail once he'd showered and dressed. Three lost 70/30s in the first orbit and I was back in the room before he got out of the shower after busting in 17th.

People wrongly look at deals in terms of the money that goes to the eventual champion and forget to think about the current equity they are risking. That equity is part of your net worth whether you like it or not. So, before turning down a deal, think about whether you would risk your current equity (minus locked up money) to win the current top prize on offer?

Other than variance, the utility of the money is another reason to make a deal. If you are a recreational player and the deal money would secure you a bucket list item like a new car, a holiday, a deposit on a house etc, then there is no shame in dealing.

If you are a serious player then taking a deal might secure you a new bankroll to play in bigger games. Let's say you play a major tournament where you have $7,000 locked up, 1st gets $30,000, your equity is $20,000 and somebody offers you $16,000. That might be a bad deal on the face of it but if $16,000 means you can comfortably move up in stakes and play more lucrative games, it absolutely could be worth it. That makes much more sense than maximising your equity.

Players who are staked should probably take a deal if it gets them out of makeup with their backer. Isaac Haxton once jokingly commented on a bad deal saying it was only good if it covered the player's sports betting losses, but there is truth to that.

My biggest ever result was a 2nd place finish in a $1,500 World Series of Poker event. Heads-up we were playing for $262,502 (locked up) and $424,577. I was short stacked and my equity was $293,000 but I was able to

negotiate $300,000 partly because my opponent was $300,000 in makeup with his backer. He locked up $365,000 meaning he was out of makeup and then splitting $65,000 with his backer. He had a big chip lead but he knew how easily I could have turned that around, so it was a good deal from a utility perspective.

Having a backer is a huge factor in deals. Backers can make their players play on even if they want to deal. In fact many poker deals are made between sets of backers not the actual players. If you are in a live tournament and about to make a deal, it is very useful to know if the other players have backers. It can also be useful to have one (or pretend you have one). Players who turn down deals are often seen as instant villains, something I learned the hard way in my first year on the circuit. With six left on my second ever final table, I rejected a deal as the short stack that would have given me little or nothing over what I was already guaranteed, and well below my ICM. The problem I quickly found was that I was now cast as the villain of the piece, and the other five players set as their prime objective to get the naysayer out so they could agree to the chop. After an hour of battling one against five I did indeed bust in sixth, prompting my brother who was railing to ask if I regretted not taking the deal. I assured him I did not. In poker you submit to the short term vagaries of luck and randomness in the knowledge that so long as you keep making the right decisions, you will profit in the long term. Conversely, agreeing to bad deals can only cost you in the long term, and I would have felt ashamed of myself if I had done it.

I did, however, learn one important lesson that day. While you never want to agree to a bad deal to avoid making the others see you as the bad guy, you also don't want to be seen as the only obstacle to a deal. It was clear the most experienced player of the six also saw that it was a bad deal for everyone but the chipleader (who was getting first place prize money), but he kept quiet in the talks allowing me to assume the bad guy role.

If you are rich there is no reason to do a deal to even out the variance or for utility reasons. From a game theory perspective it puts you in a very desirable position where you can negotiate better than ICM deals and also put pressure on your opponents at the table.

Deal mistakes

Understanding ICM will fix most deal mistakes. Knowing that short stacks are typically worth more, big stacks are worth less and chip/chop deals rarely make sense will help you navigate out of any major deal mistakes.

A lot of deal mistakes come down to what I call inaccurate anchoring. An anchoring bias is when a person is fixated on a particular reference point or 'anchor'. They might, for example, fixate on the price they paid for their house when considering how much to sell it for. In final table deals the players anchor to either what their current position would get them or a particular amount they had hoped to lock up.

In our example above, Player 1 might struggle as the chip leader with a deal that pays less than 2nd place. Player 5 may turn down an ICM deal worth double their current payout because if they came 3rd it would be their biggest ever score. Player 3 might turn down a very generous ICM deal worth more than their current 3rd place payout because coming 2nd would get them back in profit after a bad downswing.

In a live tournament it is a good idea to engage the rest of the table in conversation before any deal is struck to get an idea of each player's incentives. You can pick up a lot of information which can inform how to get the most out of a deal. First and foremost you'll learn if your tablemates understand ICM, if so then you can forget proposing a favourable chip/chop deal. You will learn who the professionals are and who is unlikely to accept a deal where they thought they were being disrespected. You will also find out what the money means to each player and if they have anchored onto a particular payout they won't budge from.

In live poker people do not understand ICM as much, which is why they often scoff at ICM deals or can be tricked into taking a bad deal. It is very common for inexperienced players to get pressured into a bad deal, often simply by the social pressure of not wanting to be a pariah for the rest of the tournament. This happens a lot in local tournaments where the players know each other and go on to talk about you behind your back if you don't deal.

The question is, do you care about money or the admonishment of strangers? If you are playing in a major tournament then taking a bad deal

because of social pressure is a huge mistake. These spots simply do not come up often enough to justify people-pleasing, so unless you genuinely worry for your safety (which is a real concern in some card rooms) don't take a bad deal. Having said that, if the card room is a regular haunt then you could give a little bit of leeway to the locals if you want to have a cordial future playing environment. In particular if the prizes are quite low for you it might be helpful to do a less than perfect deal now so you can remind the regulars of your generosity if you ever find yourself at a bigger final table with the same players.

One way of avoiding social pressure entirely is to simply tell your table that you have a backer that you have to run things by first. I often would walk over to my Chip Race co-host David Lappin and ask him to shake his head looking angry to infer that I tried my best but my backer said no. I do this too when trying to negotiate a better than ICM deal for myself based on my skill edge without wanting to overtly tell the rest of the table I think I am better than them. It is much easier to make somebody not at the table the villain rather than create an awkward playing environment.

Saver deals

A saver deal happens on the money bubble and it involves giving the Bubble Boy their buy-in back or a mincash. Nobody wants the emotional experience of playing that long and bubbling which is why saver deals get proposed. Of course all it really does is bring the actual bubble forward one place, although they tend to get proposed on the bubble so the player who has just been eliminated was blissfully unaware they were on the actual bubble.

Let's look at an example. This is a $200 MTT with 15 players left and we are on the bubble, these are the chips and equities:

Player	Potential Payout	Chips	Equity
Player 1	$6,000	100,000	$3,006.47
Player 2	$4,700	90,000	$2,852.84
Player 3	$3,600	80,000	$2,684.81
Player 4	$2,900	70,000	$2,500.14
Player 5	$2,300	60,000	$2,296.13
Player 6	$1,900	50,000	$2,069.40
Player 7	$1,300	50,000	$2,069.40
Player 8	$1,000	40,000	$1,815.55
Player 9	$800	30,000	$1,528.01
Player 10	$500	30,000	$1,528.01
Player 11	$500	20,000	$1,192.91
Player 12	$500	20,000	$1,192.91
Player 13	$500	10,000	$754.47
Player 14	$500	10,000	$754.47
Player 15		10,000	$754.47

Now let's look at what happens when we take $500 from the first prize so we can give the Bubble Boy a mincash too:

Player	Potential Payout	Chips	Equity
Player 1	$5,500	100,000	$2,931.99
Player 2	$4,700	90,000	$2,785.92
Player 3	$3,600	80,000	$2,625.52
Player 4	$2,900	70,000	$2,448.65
Player 5	$2,300	60,000	$2,252.72
Player 6	$1,900	50,000	$2,034.85
Player 7	$1,300	50,000	$2,034.85
Player 8	$1,000	40,000	$1,791.55
Player 9	$800	30,000	$1,519.26
Player 10	$500	30,000	$1,519.26
Player 11	$500	20,000	$1,214.67
Player 12	$500	20,000	$1,214.67
Player 13	$500	10,000	$875.36
Player 14	$500	10,000	$875.36
Player 15	$500	10,000	$875.36

Understandably, the equities of the five shortest stacks have benefited the most from this deal, not only have they seen a boost to their equity but they have also realised $500 in equity. Everyone else at the table has suffered a hit to their equity, perhaps more than some would realise. In saver deals you take the money from the chip leader but in terms of equity most of the table takes a hit, because they all still have a chance of winning the whole tournament where $500 is missing from the 1st place prize.

The chip leader loses $74.78 in equity and Player 2 loses $66.92, with each player after them losing a lower amount. Most novices would assume a deal like this would see the chip leader 'lose' $500 in equity because they are most likely to win the tournament but they are actually losing a small fraction of that. The reality is that all the medium to large stacks suffer an equity hit with a saver deal.

On the face of it a saver deal doesn't look particularly costly for the chip leader but there is another reason why big stacks should reject them. That is because the bubble is where the chip leader can make the most money and keeping the bubble going is in their interest. We will look at hands in the next section where the chip leaders can play more aggressively on the bubble

which demonstrates why this period should not be wasted, especially with a deal that mostly gets pruned from your equity.

I was on the bubble of a €2,000 High Roller in Hamburg which was also the final table, as it was a small field. A bunch of locals wanted to do a saver deal. George Danzer was the chip leader and I'll always remember how direct Danzer was. He simply said he could not agree to it because the bubble was so good for him. They were not sure what he meant, the tournament continued and they quickly realised what he meant as he put the pressure on them opening every hand. Being German they appreciated it, they took it in their stride, which is very different to a lot of British or Irish players who would take it really personally.

If you are one of the shorter stacks at the table you should probably agree to a saver deal. Mincashing is worth so much more to you with a small stack at risk of bubbling. You might also want to agree to a saver not to lock up a mincash but simply to end the bubble. Bubbles can go on for a long time and if you are not a big stack you can't play as many hands, so even if you are comfortable playing bubbles it is a very negative EV period for smaller stacks in general, especially when there is an aggressive chip leader at the table.

If you have a big stack you should never agree to a saver deal. Not only does the money come overwhelmingly from your equity but you are passing up a chance to make even more equity before the bubble bursts.

Swap deals
There is never a bad time to deal but in practice you cannot agree to a 30-way chop (although my co-author Barry informs me you can do this quite easily in his local casino in Sheffield). Professionals use other methods to decrease their variance when they are deep but not near the final tables; most notably swap deals.

A swap deal is simply where you and another player agree to swap a small percentage of your action. Often these are done at the start of a tournament. I always do a friendly swap with David Lappin because I'll be expected to rail him if he makes the final table and I want to have something

on the line if I am forced to watch his showboating. In big tournaments I like to get some swaps to reduce my variance and for major events like the WSOP Main Event I like to do a bunch of 1% swaps because I'd love to have a final table sweat in that event.

When I get deep in an event I look around at who is left in the field to see if I want to swap with anybody. My criteria is it has to be with somebody at a similar skill level and most of all they have to be ICM aware. Edges are small late on in tournaments so I am looking for someone who is not going to punt off a massive amount of equity needlessly. That tends to mean I only swap with online poker players.

You can do swaps based on the amount of chips a player has. I like to look at what we both have locked up then look at how much equity we both currently have and do a swap based on that. Let's go back to our last example, a reminder what that looked like:

Player	Potential Payout	Chips	Equity
Player 1	$5,500	100,000	$2,931.99
Player 2	$4,700	90,000	$2,785.92
Player 3	$3,600	80,000	$2,625.52
Player 4	$2,900	70,000	$2,448.65
Player 5	$2,300	60,000	$2,252.72
Player 6	$1,900	50,000	$2,034.85
Player 7	$1,300	50,000	$2,034.85
Player 8	$1,000	40,000	$1,971.55
Player 9	$800	30,000	$1,519.26
Player 10	$500	30,000	$1,519.26
Player 11	$500	20,000	$1,214.67
Player 12	$500	20,000	$1,214.67
Player 13	$500	10,000	$875.36
Player 14	$500	10,000	$875.36
Player 15	$500	10,000	$875.36

Let's say Player 7 wanted to swap with Player 9. Player 7 has $2,034.85 equity, or $1,534.85 after the $500 already realised. Player 9 has $1,519.26 in equity, or $1,019.26 after their locked up $500 min cash. Based on the 3/2 ratio between the players, they might agree a deal with Player 7 getting 15% of Player 9, while Player 9 gets 10% of Player 7. This is not factoring skill. If I was Player 9 and Player 7 was inexperienced I'd probably want to do something closer to their 10% to my 12%.

The most important thing is the player has to be trustworthy, which often means taking a chance on them the first time.

When should you swap? When the amount of equity you have left in the tournament is significant to you in bankroll or utility terms. If you have a $10,000 bankroll and you have $500 of equity in your current tournament, it's not really worth swapping. If you are in a major event and your equity is $15,000 then that is a different proposition. You now have a $25,000 bankroll and only $10,000 of it is realised, so you have $15,000 riding on one tournament. You should do everything you can to reduce your exposure. If you could do a 50-way chop to secure $15,000 you should. In reality you cannot do that so you should do as many swaps as possible, even if it means

giving up $1,000 in equity.

Skill edge

So far we have looked at deals that do not factor in skill edge, which covers most real life examples of deals in poker tournaments. Most of the time in a poker tournament it is a handful of unknown players dealing with other unknowns, and other than looking each other up on PocketFives or The Hendon Mob, they cannot truly make an assessment of each other's skill. Also as the tournament progresses to the end game stages even the best players rarely have more than a 5% edge over the table.

It is also quite socially awkward to insist on a more favourable deal than ICM because of your edge. You are essentially telling your tablemates you think you are better than them, which can get their backs up and potentially could lead them to no deal out of spite. However, if you do have an edge you are perfectly within your rights to try to negotiate a deal that reflects that, in the same way that a skilled professional in any field is entitled to ask for more than an amateur or less skilled professional would for the same job.

If you can make the case that you are the superior player then you need a rough idea of what your edge is in order to get a favourable deal. At this stage I should say that most professional players greatly overestimate their edge at final tables. At a relatively fast structured final table with average opponents a seasoned professional only really has about 5-10% edge. You only need to look at the win rates in SNGs these days to realise that. The best SNG grinders these days rarely have more than a 10% edge and in the hyper structures it could be as low as 2%. I used to play turbo heads-up SNGs and the best regulars in those games only won 52-55% of them, even against very bad players. While most players do not realise how narrow edges are at final tables, you will have a very hard time persuading them that you have a 15-20% edge over them in a deal negotiation.

The way to structure an edge based deal is to put aside the amount everyone has locked up and award yourself a premium on the remainder. For example, at this final table you are Player 1 and you estimate have a 10% edge:

Player	Potential Payout	Stack	Equity
1	$4,900	200,000	$3,058
2	$3,200	160,000	$2,778
3	$1,800	120,000	$2,441
4	$1,200	100,000	$2,247
5	$950	40,000	$1,526

Everyone at this final table has $950 locked up, so first let's remove that from the prize pool. That leaves $7,300 in the prize pool, which makes the new equities...

Player	Potential Payout	Stack	Equity
1	$3,950	200,000	$2,107.59
2	$2,250	160,000	$1,828.12
3	$850	120,000	$1,491.28
4	$250	100,000	$1,296.77
5	$0	40,000	$576.24

That gives you $2,107.59 equity and with your 10% edge that means you want to take $2,318.35 ($3,268.35 when you add on the $950 5th place cash). That leaves an additional $4,981.65 to be distributed between the other players. Now you can distribute the remaining prize pool in a way that was proportional to the other four players' equities prior to the deal. It would look something like this (we have added the $950 min cashes back to the payouts and deal amounts):

Player	Potential Payout	Stack	Deal amount
1	$4,900	200,000	$3,268.35
2	$3,200	160,000	$2,703.54
3	$1,800	120,000	$2,380.72
4	$1,200	100,000	$2,193.91
5	$950	40,000	$1,502.96

This looks like a pretty good deal for all concerned. You get an extra $210.35 for your troubles and the biggest hit any single player has taken is Player 2, who loses $74.46 in equity but locks up $2,703.54 which is very close to the $3,200 they would get if their 2nd place position held. Player 5 only loses $23.04 in equity and locks up an extra $552.96 as a short stack.

In practice it's not so easy to do such complex calculations on the fly and there is the human element to think of. Some players will make it clear to you they have a set amount they really want to lock up. For example Player 2 might have been playing very tight knowing they are close to getting heads-up, so you might be able to exploit their desire to get a better than 3rd place prize. Likewise Player 5 might be eyeing up the big prizes and not quite as happy to take the smallest prize. Deals like this are part art, part science. In practice you might have to negotiate something like this instead:

Player	Potential Payout	Stack	Deal amount
1	$4,900	200,000	$3,268.35
2	$3,200	160,000	$2,393.91
3	$1,800	120,000	$2,380.72
4	$1,200	100,000	$2,314.41
5	$950	40,000	$1,902.96

There is a slight stigma to professional players asking for a better-than-ICM deal which I think is silly. They are a professional player, of course it makes sense they would want a deal that would reflect that. If you had a leak in your bathroom and a highly experienced plumber wanted £200 to fix it, or your friend who is a 'bit handy' offered to do it also wanted £200, you would always go with the professional. It is not unreasonable that the professional wants a deal that reflects their ability and experience.

The Black Swan of poker deals

There have been rare moments in poker history where a player has managed to secure a first place prize that was better than the official prize on offer, in exchange for flattening the consolation prizes. A classic example of this is when online poker crusher '€urop€an' won the 2016 WCOOP Super Tuesday. He had both an enormous chip lead and is also regarded as one of the greatest online tournament players of all time.

This is how things stood when the deal was proposed, with the potential payouts as they were (the chip stacks were not exact but the last way each one was reported during the event):

Player	Potential Payout	Chips	Equity
€urop€an	$292,182	10,000,000	$277,205
XingsMaster	$214,168	1,200,000	$196,598
reno8	$156,984	982,850	$189,529

However, €urop€an managed to negotiate this deal ($36,450 was left for the player who won outright, which €urop€an easily was able to do):

Player	Payout
€urop€an	$297,450
XingsMaster	$189,885
reno8	$176,000

He had to win the tournament but when he inevitably did he secured $5,268 more than the official payout. In exchange for this, 'XingMaster' secured $32,901 more than what 3rd would have got, but $24,283 less than what he would have won for finishing second. 'reno8' won $19,016 more than he would have for his third place finish.

If this were an equal skill match up then amazingly €urop€an only had $277,205 in equity despite a 10-to-1 chip lead. Once again, that's the 'punishment factor' of being the chip leader. Assuming equal skill this is what ICM says would be their likely finish position chances:

Player	1st	2nd	3rd
€urop€an	82.1%	16.2%	1.7%
XingsMaster	9.8%	45.9%	44.2%
reno8	8.1%	37.9%	54%

€urop€an *only* winning 82.1% of the time might surprise some people and would lead them to argue that it is worth the other two players not dealing. The problem for the other two players is that both of them don't win 90% of the time.

Then you have the matter of edge which is not insignificant here. It cannot be understated, €urop€an is regarded as one of the best players in the world, even against other good players. If he has a 10% edge here that 82.1% chance of him winning almost becomes a certainty. It looks like a terrible deal on the surface, but as we have seen previously in situations like these, locking up 2nd place is much more important than going for the win. It actually doesn't look like a terrible deal on the surface. XingsMaster and reno8 essentially are playing a pseudo heads-up match for $57,184 (the difference between 2nd and 3rd place prizes) and have paid €urop€an $5,268 for the privilege of splitting $51,916 amongst themselves.

When something else is on the table

There are times when something other than the immediate money is being played for at a final table. This could be, for example, leaderboard points, a prop bet or a special promotion. In 2018 I made the final table of UK Millions and bought into the tournament using partypoker Live Dollars. There was a special last longer promotion for partypoker satellite entrants worth $100,000. I made the final table and the eventual winner, Alex Foxen, had also entered using partypoker satellite dollars. We privately agreed a deal between the two of us, which was fine as nobody else was in contention for this added value prize. However, there will be times where a player might need to finish in a certain position to win a secondary prize that should be factored into deal negotiations. It might mean that they have to play on or finish in a particular position. It might also mean that you have to officially award them the title but in doing so can negotiate a better than 2nd place prize for getting out of their way.

More common are players who will take a bad deal to ensure they win the title for vanity purposes. I say vanity but I don't mean this in a negative sense, for some players winning a title is worth taking a negative EV deal and that is perfectly fine. There used to be a time when winning a title might guarantee a player sponsorship opportunities but those instances are few and far between these days, even the WSOP Main Event champion rarely manages to find a sponsor. I would love to win a bracelet or an Irish Open, but my primary focus as a professional will always be the money.

There are too many nuances to provide a roadmap for these rare moments in poker but I hope we have given you enough tools to understand what to look for in a deal. One final note where this is concerned and that is to make sure any deal you make is within the operator's T&Cs. Some tours do not allow deals, especially ones where it would involve one of the players deliberately conceding a finishing position to the other player. Doing these deals without the operators facilitating the proceedings means you have to trust the person you are dealing with, which will be hard as often they are a complete stranger.

The ethics of deals

One final note and that is what are your ethical responsibilities when negotiating a final table deal? There is making a good deal and there is fleecing your tablemates, where do you draw the line? If you have 50% of the chips in play and manage to get a chip chop deal, as we have seen you will be laughing all the way to the bank but you have also taken a large amount of equity from other players who clearly do not understand what they got themselves into.

Ultimately, if all parties are happy with the deal, then one could argue it is a fair deal. However, I would say that for the long term benefit of all concerned, making sure a deal is a win/win for everyone will reap dividends. If a bad player agrees to a bad deal, when they learn how bad the deal was it might leave a sour taste in their mouth. Giving other regulars some leeway in a deal may benefit you in the future when you find yourself in a similar position with the same players at a bigger final table. As you progress as a player you don't want to get a reputation as being shady when deal making.

We make deals to reduce variance in poker. Having a good reputation and plenty of friends at the table is one of the best ways to avoid volatility away from the tables.

Even if you do not plan to deal at the final table, the final table is the best time to take stock of your edge and the equity remaining at the table. It is one of the few times that you can make relatively reliable Bubble Factor assessments as well as estimations of what your stack is worth. The other players won't be doing this and it is very useful to keep in the back of your mind when a big laddering or playing for the win spot materialises.

Key Takeaways

- Think of deals like you are playing a new tournament with a higher buy-in
- There is no bad time to propose a deal
- Chip Chop deals are the most removed from the tournament you have just played and are usually bad for everyone but the big stacks
- The best reason to deal is to reduce variance when a lot of money is on the line
- Utility and time are perfectly good reasons to deal
- Social pressure is not a good reason to deal
- In live tournaments try to find out what the money means to the other players ahead of a deal
- Chip leaders should reject saver deals, short stacks should take them

Things the pros don't know

- Swapping with ICM savvy players late in a tournament is a way to reduce variance
- Most players rarely have more than a 5% edge at a final table so make sure a deal reflects that
- Doubling up doubles your chances of winning the whole tournament but does not double your equity

Chapter 8: Some mistakes are bigger than others

We have mentioned a few times that there are better things to study in MTTs if you want to get more bang for your buck. For example it is more optimal to study your 30BB ranges than 100BB ranges, because you will spend more of your time in a tournament hovering around the 30 big blind mark and also because this is the average stack size during crucial ICM heavy periods like the bubble.

Let's go one step further and drill down on what the most costly mistakes you can make are from an ICM perspective, because they may surprise you and a very clear pecking order for what to study becomes clear.

In this example five players are left in a $10 MTT with a standard payout structure. Everyone has locked up $58 and are playing for a remaining $688 prize pool.

Seat	Potential Payout	Stack	Equity
1	$300	15,000	$115.49
2	$202	30,000	$158.99
3	$114	40,000	$180.87
4	$74	30,000	$158.99
5	$58	20,000	$131.66

Seat 5 is the Big Blind. In our first example the blinds are 1,000/2,000 with a 400 ante. Seat 1 folds and Seat 2 in the Cutoff shoves for 30,000. Seat 3 folds and Seat 4, who also has exactly 30,000 chips, calls.

Below is a table of the profitability of each hand Seat 2 can shove, which we got from a simulation in Holdem Resources Calculator (HRC).
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100% **AA** +1.71	100% **AKs** +0.91	100% **AQs** +0.62	100% **AJs** +0.38	100% **ATs** +0.26	100% **A9s** +0.16	100% **A8s** +0.12	100% **A7s** +0.12	100% **A6s** +0.10	100% **A5s** +0.14	100% **A4s** +0.13
100% **AKo** +0.85	100% **KK** +1.34	100% **KQs** +0.25	100% **KJs** +0.21	100% **KTs** +0.18	100% **K9s** +0.10	100% **K8s** +0.04	100% **K7s** +0.04	100% **K6s** +0.04	100% **K5s** +0.02	100% **K4s** +0.01
100% **AQo** +0.54	100% **KQo** +0.13	100% **QQ** +1.06	100% **QJs** +0.19	100% **QTs** +0.15	100% **Q9s** +0.07	100% **Q8s** +0.01	0% **Q7s** -0.03	0% **Q6s** -0.03	0% **Q5s** -0.04	0% **Q4s** -0.05
100% **AJo** +0.27	100% **KJo** +0.10	100% **QJo** +0.07	100% **JJ** +0.80	100% **JTs** +0.14	100% **J9s** +0.06	3% **J8s** -0.00	0% **J7s** -0.04	0% **J6s** -0.09	0% **J5s** -0.09	0% **J4s** -0.10
100% **ATo** +0.14	100% **KTo** +0.06	100% **QTo** +0.03	100% **JTo** +0.02	100% **TT** +0.58	100% **T9s** +0.06	0% **T8s** -0.01	0% **T7s** -0.05	0% **T6s** -0.09	0% **T5s** -0.14	0% **T4s** -0.14
100% **A9o** +0.04	0% **K9o** -0.03	0% **Q9o** -0.06	0% **J9o** -0.07	0% **T9o** -0.07	100% **99** +0.37	0% **98s** -0.02	0% **97s** -0.05	0% **96s** -0.09	0% **95s** -0.14	0% **94s** -0.19
53% **A8o** -0.00	0% **K8o** -0.09	0% **Q8o** -0.12	0% **J8o** -0.14	0% **T8o** -0.14	0% **98o** -0.15	100% **88** +0.25	0% **87s** -0.05	0% **86s** -0.09	0% **85s** -0.14	0% **84s** -0.19
0% **A7o** -0.01	0% **K7o** -0.09	0% **Q7o** -0.16	0% **J7o** -0.18	0% **T7o** -0.18	0% **97o** -0.19	0% **87o** -0.19	100% **77** +0.20	0% **76s** -0.06	0% **75s** -0.11	0% **74s** -0.16
0% **A6o** -0.02	0% **K6o** -0.10	0% **Q6o** -0.16	0% **J6o** -0.22	0% **T6o** -0.23	0% **96o** -0.23	0% **86o** -0.23	0% **76o** -0.19	100% **66** +0.16	0% **65s** -0.07	0% **64s** -0.12
100% **A5o** +0.01	0% **K5o** -0.11	0% **Q5o** -0.18	0% **J5o** -0.23	0% **T5o** -0.28	0% **95o** -0.28	0% **85o** -0.28	0% **75o** -0.25	0% **65o** -0.20	100% **55** +0.13	0% **54s** -0.08
96% **A4o** +0.00	0% **K4o** -0.13	0% **Q4o** -0.19	0% **J4o** -0.24	0% **T4o** -0.28	0% **94o** -0.34	0% **84o** -0.34	0% **74o** -0.30	0% **64o** -0.26	0% **54o** -0.22	100% **44** +0.11
0% **A3o** -0.01	0% **K3o** -0.14	0% **Q3o** -0.20	0% **J3o** -0.26	0% **T3o** -0.30	0% **93o** -0.34	0% **83o** -0.40	0% **73o** -0.36	0% **63o** -0.31	0% **53o** -0.28	0% **43o** -0.29
0% **A2o** -0.03	0% **K2o** -0.15	0% **Q2o** -0.22	0% **J2o** -0.27	0% **T2o** -0.31	0% **92o** -0.36	0% **82o** -0.40	0% **72o** -0.42	0% **62o** -0.37	0% **52o** -0.34	0% **42o** -0.35

The hands with a border around them are the hands HRC would open and the percentage at the top of each hand is the number of times they would shove that hand. This is for balance reasons, A8o for example would get shoved 53% of the time as a bluff to give the range the right mix of bluffs and value. These are GTO ranges, meaning they assume Seat 2's opponents know the correct ranges they should be calling.

None of that is important for this discussion, instead pay attention to the plus or minus number under each hand. For example 22 is -0.07 and KTo is +0.06. This figure is the profitability of each hand in terms of the remaining prize pool. In this example shoving with AA would make Seat 2 1.17% of the prize pool, which is $8. Shoving with A9o gets us a mere 0.04% of the prize pool, which is $0.30. If Seat 2 was showing off with 72o it would cost them 0.42% of the prize pool, which would mean they lost $2.90 on average.

No surprises that shoving with Aces is profitable and shoving with 72o is a losing play. Pay attention instead to the difference between hands and the next ranked hand, in particular at the point where a hand type stops being

profitable.

For example, 22 is an unprofitable shove, we lose 0.09% of the prize pool or $0.48 with that hand. 33 on the other hand will see us win 0.09% of the prize pool or $0.62. That is a $1.10 difference between the profitability of 33 and 22. 44 wins us 0.11% of the prize pool, which is not that much greater than the 0.07% of 33.

Likewise, A7o loses us just 0.01% of the prize pool, A8o is exactly breakeven and A9o wins us 0.04% of the prize pool. A quick note to mention just how much better suited broadway hands like QJs do compared to offsuit aces and small pairs. QJs wins us 0.19% which is twice as profitable as 33 and almost five times as profitable as A9o. This is because the hands perform better when called because they are less likely to be dominated, have flush outs and reasonable blocker effects. Beyond those observations the hands compound in value as you go further up the grid, which is expected.

The difference between the first hand that is profitable to shove and the last hand to be unprofitable from the same grouping is not that much. The difference between A7o and A9o is just 0.03% of the total prize pool. The difference between 22 and 33 is 0.16% of the prize pool. The difference between K9o and KTo is 0.09% of the prize pool. The difference between Q7s and Q8s is just 0.04% of the prize pool.

If you get your shoving ranges wrong by just one 'pip' you will usually not be making a huge mistake. Even if you got them quite wildly wrong, it isn't too bad. Shoving K5o when the first profitable hand is KTo is just a 0.17% of the prize pool mistake. Shoving J3s when the bottom of your range should be J8s is a 0.12% of prize pool error. This is a function of fold equity: when you shove in late position most of your profit comes from when everyone folds rather than the hand winning when called. Obviously the earlier the position you shove from, the more players behind who can call and the less fold equity you have. So you need much more equity against calling ranges when you shove UTG than when you shove the button, and light shoves from UTG are likely to be bigger mistakes.

Now let's look at the calling ranges for the Small Blind:

100% **AA** +5.92	100% **AKs** +1.32	100% **AQs** +0.66	100% **AJs** +0.10	0% **ATs** -0.43	0% **A9s** -1.40	0% **A8s** -1.84	0% **A7s** -2.13	0% **A6s** -2.35	0% **A5s** -2.32	0% **A4s** -2.54
100% **AKo** +0.93	100% **KK** +4.01	0% **KQs** -1.52	0% **KJs** -2.03	0% **KTs** -2.51	0% **K9s** -3.27	0% **K8s** -3.64	0% **K7s** -3.74	0% **K6s** -3.86	0% **K5s** -4.10	0% **K4s** -4.26
100% **AQo** +0.21	0% **KQo** -2.09	100% **QQ** +2.85	0% **QJs** -2.94	0% **QTs** -3.40	0% **Q9s** -4.01	0% **Q8s** -4.37	0% **Q7s** -4.66	0% **Q6s** -4.67	0% **Q5s** -4.88	0% **Q4s** -5.03
0% **AJo** -0.39	0% **KJo** -2.65	0% **QJo** -3.60	100% **JJ** +1.88	0% **JTs** -3.80	0% **J9s** -4.29	0% **J8s** -4.62	0% **J7s** -4.85	0% **J6s** -5.12	0% **J5s** -5.27	0% **J4s** -5.43
0% **ATo** -0.96	0% **KTo** -3.16	0% **QTo** -4.09	0% **JTo** -4.51	100% **TT** +0.95	0% **T9s** -4.28	0% **T8s** -4.58	0% **T7s** -4.81	0% **T6s** -5.10	0% **T5s** -5.53	0% **T4s** -5.63
0% **A9o** -1.99	0% **K9o** -3.98	0% **Q9o** -4.77	0% **J9o** -5.05	0% **T9o** -5.05	59% **99** -0.00	0% **98s** -4.39	0% **97s** -4.59	0% **96s** -4.87	0% **95s** -5.30	0% **94s** -5.69
0% **A8o** -2.48	0% **K8o** -4.39	0% **Q8o** -5.15	0% **J8o** -5.40	0% **T8o** -5.35	0% **98o** -5.14	0% **88** -0.59	0% **87s** -4.42	0% **86s** -4.68	0% **85s** -5.10	0% **84s** -5.48
0% **A7o** -2.80	0% **K7o** -4.50	0% **Q7o** -5.44	0% **J7o** -5.64	0% **T7o** -5.59	0% **97o** -5.36	0% **87o** -5.17	0% **77** -1.05	0% **76s** -4.50	0% **75s** -4.89	0% **74s** -5.27
0% **A6o** -3.04	0% **K6o** -4.63	0% **Q6o** -5.46	0% **J6o** -5.93	0% **T6o** -5.89	0% **96o** -5.66	0% **86o** -5.45	0% **76o** -5.25	0% **66** -1.43	0% **65s** -4.73	0% **64s** -5.09
0% **A5o** -2.99	0% **K5o** -4.88	0% **Q5o** -5.68	0% **J5o** -6.09	0% **T5o** -6.35	0% **95o** -6.11	0% **85o** -5.88	0% **75o** -5.67	0% **65o** -5.49	0% **55** -1.89	0% **54s** -4.98
0% **A4o** -3.22	0% **K4o** -5.06	0% **Q4o** -5.84	0% **J4o** -6.25	0% **T4o** -6.46	0% **94o** -6.52	0% **84o** -6.30	0% **74o** -6.07	0% **64o** -5.88	0% **54o** -5.75	0% **44** -2.45
0% **A3o** -3.40	0% **K3o** -5.13	0% **Q3o** -5.89	0% **J3o** -6.30	0% **T3o** -6.51	0% **93o** -6.50	0% **83o** -6.59	0% **73o** -6.36	0% **63o** -6.17	0% **53o** -6.04	0% **43o** -6.22
0% **A2o** -3.54	0% **K2o** -5.27	0% **Q2o** -6.04	0% **J2o** -6.45	0% **T2o** -6.65	0% **92o** -6.65	0% **82o** -6.66	0% **72o** -6.75	0% **62o** -6.56	0% **52o** -6.43	0% **42o** -6.60

Before we compare hands to hands, let's look at the difference between the two ranges. AA makes 5.92% of the prize pool as a call compared to 1.17% of the prize pool as a shove, which is five times as much. Calling with 22 costs us 3.32% of the prize pool as a call compared to losing us just 0.07% of the prize pool as a shove, which is 47 times more impactful. In most cases the impact of calling is greater.

This is because a lot of the time a shove will just take down the blinds uncontested, so a lot of the time you win a 5,000 pot. When you call you are playing for stacks, the pot size is going to be 63,200 in this example assuming the Big Blind doesn't also call. This quite simply is why the Small Blind has a much tighter calling range than the Cutoff's shoving range. They have to have the best hand at showdown because they cannot make anyone fold.

There are hands that are more profitable for the shover than the caller. In this example AQo wins 0.54% of the prize pool as a shove and just 0.21% as a call. Here we are seeing the blocker power of an Ace and a Queen, plus

good equity when called, is better than just the equity of the hand as a call.

Now let's look just at the Small Bind's range and the difference in particular between the last unprofitable hands and first profitable hands. AJo is an unprofitable call and it costs us 0.39% of the prize pool, AQo is profitable and it earns us 0.21% of the prize pool. That is a 0.60% difference. In the shove example the inflection point for the rag aces (A9o vs A7o) was only 0.03%. The difference between TT and 99 is 0.95% of the prize pool, the inflection point for the pairs (33 vs 22) saw just a 0.16% difference.

Let's say you get things wildly wrong and call with A7s, which would lose you 2.13% of the prize pool. That is a difference of 2.23% of the prize pool compared to AJs, the first hand we can profitably call. The difference between those two hands as a shove (which are both profitable) is just 0.26% of the prize pool. The difference between those two hands as a call is almost 10 times more impactful than the difference between them as a shove.

The lesson here is clear, a calling mistake is more impactful than a betting mistake. If you get the bottom of your shoving range wrong by one 'pip' it barely makes a difference. Make the same level of error with your calling range and it can easily be five, ten, or 20 times more costly. The same is true with bad folds. If the first pair you would shove is 44 then the difference between that and 33 (the correct bottom of your pair range) is just 0.02% of the prize pool. If your calling range started at JJ instead of TT, the difference between those two hands is 0.93% of the prize pool.

Obviously JJ and TT are higher equity hands than 44 and 33, which is one of the reasons why they are much bigger in impact. The point is not to compare the shoving range to the calling range too much, it is to compare the hands within each range. Calling ranges are going to be tighter because they contain higher equity hands, which is why they are so much more important to get right.

This is particularly true live where people still over fold to aggression deep in tournaments when ICM is big, but was even more true years ago. Around the time I started there was one player, Joe O'Neill, who used to run over tables through sheer aggression. A very funny man, when he saw players at his table starting to show signs of exasperation, Joe used to joke

"If you want to put a halt to my gallop, you only need to say the word. And that word is call"

Like most jokes this one had more than a grain of truth, and eventually live poker moved on to the point that more people did start saying the C-word every loose aggressive player dreads, and Joe's results went downhill.

Let's jump to another example. These are the same conditions as above but we have made the blinds 500/1,000 with a 200 ante. This time the Cutoff has opened, the Small Blind has shoved and the table below shows the strength of each hand the Cutoff could call with:

100% **AA** +5.54	100% **AKs** +1.45	33% **AQs** -0.13	0% **AJs** -0.33	0% **ATs** -0.37	0% **A9s** -0.60	0% **A8s** -0.71	0% **A7s** -0.83	0% **A6s** -1.05	0% **A5s** -1.04	0% **A4s** -1.32
100% **AKo** +1.13	100% **KK** +1.83	0% **KQs** -2.35	0% **KJs** -2.60	0% **KTs** -2.57	0% **K9s** -2.81	0% **K8s** -2.99	0% **K7s** -3.01	0% **K6s** -3.14	0% **K5s** -3.42	0% **K4s** -3.69
0% **AQo** -0.60	0% **KQo** -2.96	100% **QQ** +0.23	0% **QJs** -3.03	0% **QTs** -2.97	0% **Q9s** -3.17	0% **Q8s** -3.34	0% **Q7s** -3.53	0% **Q6s** -3.53	0% **Q5s** -3.81	0% **Q4s** -4.00
0% **AJo** -0.82	0% **KJo** -3.18	0% **QJo** -3.61	78% **JJ** -0.01	0% **JTs** -2.76	0% **J9s** -2.95	0% **J8s** -3.11	0% **J7s** -3.30	0% **J6s** -3.54	0% **J5s** -3.75	0% **J4s** -3.93
0% **ATo** -0.86	0% **KTo** -3.15	0% **QTo** -3.55	0% **JTo** -3.32	93% **TT** +0.00	0% **T9s** -2.72	0% **T8s** -2.88	0% **T7s** -3.06	0% **T6s** -3.30	0% **T5s** -3.75	0% **T4s** -3.88
0% **A9o** -1.10	0% **K9o** -3.42	0% **Q9o** -3.76	0% **J9o** -3.53	0% **T9o** -3.27	0% **99** -0.10	0% **98s** -2.75	0% **97s** -2.88	0% **96s** -3.11	0% **95s** -3.54	0% **94s** -3.92
0% **A8o** -1.22	0% **K8o** -3.60	0% **Q8o** -3.95	0% **J8o** -3.70	0% **T8o** -3.45	0% **98o** -3.32	0% **88** -0.13	0% **87s** -2.69	0% **86s** -2.91	0% **85s** -3.33	0% **84s** -3.70
0% **A7o** -1.35	0% **K7o** -3.63	0% **Q7o** -4.14	0% **J7o** -3.89	0% **T7o** -3.64	0% **97o** -3.45	0% **87o** -3.25	0% **77** -0.15	0% **76s** -2.72	0% **75s** -3.14	0% **74s** -3.50
0% **A6o** -1.59	0% **K6o** -3.76	0% **Q6o** -4.15	0% **J6o** -4.15	0% **T6o** -3.89	0% **96o** -3.69	0% **86o** -3.48	0% **76o** -3.28	0% **66** -0.19	0% **65s** -2.99	0% **64s** -3.35
0% **A5o** -1.58	0% **K5o** -4.11	0% **Q5o** -4.45	0% **J5o** -4.37	0% **T5o** -4.37	0% **95o** -4.16	0% **85o** -3.94	0% **75o** -3.73	0% **65o** -3.57	0% **55** -0.37	0% **54s** -3.33
0% **A4o** -1.87	0% **K4o** -4.40	0% **Q4o** -4.65	0% **J4o** -4.57	0% **T4o** -4.51	0% **94o** -4.56	0% **84o** -4.32	0% **74o** -4.11	0% **64o** -3.95	0% **54o** -3.94	0% **44** -0.80
0% **A3o** -2.05	0% **K3o** -4.58	0% **Q3o** -4.81	0% **J3o** -4.72	0% **T3o** -4.66	0% **93o** -4.65	0% **83o** -4.68	0% **73o** -4.46	0% **63o** -4.30	0% **53o** -4.29	0% **43o** -4.48
0% **A2o** -2.24	0% **K2o** -4.74	0% **Q2o** -4.94	0% **J2o** -4.85	0% **T2o** -4.78	0% **92o** -4.77	0% **82o** -4.75	0% **72o** -4.80	0% **62o** -4.64	0% **52o** -4.63	0% **42o** -4.83

This is a much tighter calling range than the Small Blind had in the previous example despite very similar conditions. That is because the Small Blind is 3-betting with a much stronger range than the Cutoff was shoving in the last example. The Cutoff is only calling with the absolute top of their range here, QQ+, AK.

The profitability numbers are similar but for the most part a little smaller than the Small Blind calling range in the last example. AA makes us 5.54% of the prize pool here compared to 5.92% in the last calling example. 22 loses us 1.80% of the prize pool here compared to 3.32% in the last example.

In this example, if you called with AQo you would lose 0.60% of the prize pool but a call with AKo would win you 1.13%, which is a 1.73% difference. In the previous example the calling player would lose 0.39% calling with AJo and win 0.21% with AQo, a difference of 0.60%. The difference between the losing JJ and profitable QQ in this example is 0.24% of the prize pool, whereas in the previous example calling range the difference between the breakeven TT and winning JJ is 0.95%.

Making a 'one pip' Ax mistake in this example is much more costly than in the previous example, but making a 'one pip' pocket pair mistake is much less costly. This is because of the impact of the Small Blind's 3-betting range, which includes a lot of big hands like AK and QQ+. AQo in this example is going to be dominated a lot of the time, whereas QQ and JJ are going to be in similar flips a lot of the time, so they perform similarly to each other.

Now let's look at the original example where Cutoff shoves, but this time the Button, who has everyone covered, calls; and now the Small Blind is considering an overcall against two players. This is the Small Blind's hand strengths:

100% **AA** +4.91	0% **AKs** -4.13	0% **AQs** -6.49	0% **AJs** -7.38	0% **ATs** -7.79	0% **A9s** -8.38	0% **A8s** -8.35	0% **A7s** -8.35	0% **A6s** -8.45	0% **A5s** -8.15	0% **A4s** -8.29
0% **AKo** -5.03	100% **KK** +0.50	0% **KQs** -7.46	0% **KJs** -7.29	0% **KTs** -7.64	0% **K9s** -8.27	0% **K8s** -8.35	0% **K7s** -8.32	0% **K6s** -8.32	0% **K5s** -8.43	0% **K4s** -8.52
0% **AQo** -7.59	0% **KQo** -8.45	0% **QQ** -2.19	0% **QJs** -7.20	0% **QTs** -7.54	0% **Q9s** -8.12	0% **Q8s** -8.27	0% **Q7s** -8.49	0% **Q6s** -8.45	0% **Q5s** -8.56	0% **Q4s** -8.65
0% **AJo** -8.50	0% **KJo** -8.25	0% **QJo** -8.14	0% **JJ** -3.89	0% **JTs** -7.23	0% **J9s** -7.68	0% **J8s** -7.90	0% **J7s** -8.13	0% **J6s** -8.37	0% **J5s** -8.41	0% **J4s** -8.50
0% **ATo** -8.93	0% **KTo** -8.62	0% **QTo** -8.50	0% **JTo** -8.15	0% **TT** -5.28	0% **T9s** -7.58	0% **T8s** -7.81	0% **T7s** -8.04	0% **T6s** -8.29	0% **T5s** -8.67	0% **T4s** -8.69
0% **A9o** -9.56	0% **K9o** -9.32	0% **Q9o** -9.13	0% **J9o** -8.63	0% **T9o** -8.52	0% **99** -6.52	0% **98s** -7.86	0% **97s** -7.93	0% **96s** -8.14	0% **95s** -8.52	0% **94s** -8.94
0% **A8o** -9.49	0% **K8o** -9.38	0% **Q8o** -9.27	0% **J8o** -8.86	0% **T8o** -8.75	0% **98o** -8.76	0% **88** -6.90	0% **87s** -7.70	0% **86s** -7.86	0% **85s** -8.19	0% **84s** -8.58
0% **A7o** -9.48	0% **K7o** -9.36	0% **Q7o** -9.52	0% **J7o** -9.10	0% **T7o** -8.99	0% **97o** -8.84	0% **87o** -8.58	0% **77** -6.93	0% **76s** -7.56	0% **75s** -7.86	0% **74s** -8.24
0% **A6o** -9.59	0% **K6o** -9.36	0% **Q6o** -9.48	0% **J6o** -9.36	0% **T6o** -9.27	0% **96o** -9.07	0% **86o** -8.76	0% **76o** -8.45	0% **66** -6.94	0% **65s** -7.51	0% **64s** -7.86
0% **A5o** -9.26	0% **K5o** -9.48	0% **Q5o** -9.59	0% **J5o** -9.41	0% **T5o** -9.67	0% **95o** -9.47	0% **85o** -9.10	0% **75o** -8.76	0% **65o** -8.40	0% **55** -7.08	0% **54s** -7.64
0% **A4o** -9.40	0% **K4o** -9.57	0% **Q4o** -9.69	0% **J4o** -9.50	0% **T4o** -9.69	0% **94o** -9.91	0% **84o** -9.51	0% **74o** -9.16	0% **64o** -8.77	0% **54o** -8.53	0% **44** -7.27
0% **A3o** -9.54	0% **K3o** -9.70	0% **Q3o** -9.81	0% **J3o** -9.61	0% **T3o** -9.81	0% **93o** -9.93	0% **83o** -9.96	0% **73o** -9.61	0% **63o** -9.22	0% **53o** -8.98	0% **43o** -9.09
0% **A2o** -9.69	0% **K2o** -9.84	0% **Q2o** -9.95	0% **J2o** -9.75	0% **T2o** -9.94	0% **92o** -10.1	0% **82o** -9.98	0% **72o** -10.1	0% **62o** -9.68	0% **52o** -9.44	0% **42o** -9.54

No prizes for guessing that Small Blind can only profitably call with KK+, with two players all-in and ICM influencing the action heavily. The difference in profitability between the first losing hand QQ and first winning hand KK is 2.69% of the prize pool. Perhaps the other thing to note is just how costly a big mistake is here. Let's say we think we are up against two lots of overcards and 88 might be good here, that error would cost us 6.9% of the prize pool. If we made the same bad call in the previous two examples it would cost us 0.13% of the prize pool in the 3-bet pot and 0.59% of the prize pool in the open shove example. Two players already all-in has a compounding effect on the size of a mistake when ICM is involved.

One more example to hammer this home. Let's recreate the same conditions as our first example, but flatten the payouts. This is the new payout structure and equity:

Seat	Potential Payout	Stack	Equity
1	$230	15,000	$124.52
2	$190	30,000	$156.78
3	$150	40,000	$170.56
4	$102	30,000	$156.78
5	$74	20,000	$137.37

This is the profitability of each hand the Cutoff can shove:

AA 100% +0.67	AKs 100% +0.33	AQs 100% +0.17	AJs 100% +0.10	ATs 100% +0.08	A9s 100% +0.05	A8s 100% +0.05	A7s 100% +0.05	A6s 100% +0.05	A5s 100% +0.07	A4s 100% +0.06
AKo 100% +0.30	KK 100% +0.48	KQs 100% +0.09	KJs 100% +0.06	KTs 100% +0.05	K9s 100% +0.01	K8s 100% +0.00	K7s 100% +0.01	K6s 100% +0.01	K5s 100% +0.01	K4s 100% +0.00
AQo 100% +0.14	KQo 100% +0.05	QQ 100% +0.29	QJs 100% +0.04	QTs 100% +0.02	Q9s 0% -0.02	Q8s 0% -0.02	Q7s 0% -0.04	Q6s 0% -0.03	Q5s 0% -0.03	Q4s 0% -0.04
AJo 100% +0.06	KJo 100% +0.02	QJo 0% -0.01	JJ 100% +0.15	JTs 0% -0.00	J9s 0% -0.04	J8s 0% -0.05	J7s 0% -0.06	J6s 0% -0.08	J5s 0% -0.07	J4s 0% -0.08
ATo 100% +0.03	KTo 98% +0.00	QTo 0% -0.03	JTo 0% -0.05	TT 100% +0.07	T9s 0% -0.04	T8s 0% -0.05	T7s 0% -0.06	T6s 0% -0.08	T5s 0% -0.09	T4s 0% -0.09
A9o 23% -0.00	K9o 0% -0.04	Q9o 0% -0.07	J9o 0% -0.09	T9o 0% -0.09	99 100% +0.00	98s 0% -0.07	97s 0% -0.07	96s 0% -0.09	95s 0% -0.10	94s 0% -0.12
A8o 100% +0.00	K8o 0% -0.05	Q8o 0% -0.08	J8o 0% -0.10	T8o 0% -0.10	98o 0% -0.12	88 100% +0.01	87s 0% -0.05	86s 0% -0.07	85s 0% -0.08	84s 0% -0.10
A7o 100% +0.00	K7o 0% -0.04	Q7o 0% -0.09	J7o 0% -0.12	T7o 0% -0.12	97o 0% -0.13	87o 0% -0.11	77 100% +0.01	76s 0% -0.05	75s 0% -0.07	74s 0% -0.09
A6o 96% +0.00	K6o 0% -0.04	Q6o 0% -0.08	J6o 0% -0.13	T6o 0% -0.13	96o 0% -0.14	86o 0% -0.12	76o 0% -0.10	66 100% +0.01	65s 0% -0.05	64s 0% -0.07
A5o 100% +0.02	K5o 0% -0.04	Q5o 0% -0.09	J5o 0% -0.13	T5o 0% -0.15	95o 0% -0.16	85o 0% -0.14	75o 0% -0.12	65o 0% -0.10	55 100% +0.00	54s 0% -0.05
A4o 100% +0.01	K4o 0% -0.05	Q4o 0% -0.09	J4o 0% -0.13	T4o 0% -0.15	94o 0% -0.18	84o 0% -0.16	74o 0% -0.14	64o 0% -0.12	54o 0% -0.10	44 29% -0.00
A3o 100% +0.01	K3o 0% -0.05	Q3o 0% -0.10	J3o 0% -0.14	T3o 0% -0.15	93o 0% -0.18	83o 0% -0.18	73o 0% -0.16	63o 0% -0.14	53o 0% -0.12	43o 0% -0.13
A2o 100% +0.00	K2o 0% -0.06	Q2o 0% -0.10	J2o 0% -0.14	T2o 0% -0.16	92o 0% -0.19	82o 0% -0.18	72o 0% -0.19	62o 0% -0.17	52o 0% -0.15	42o 0% -0.15

The shape of the range has changed. Now every Ace is profitable or breakeven to shove. The smaller pairs have gone way down in value and even 99 is breakeven. Maybe most notably compared to the very first range we looked at in this chapter, most hands have gone down generally in profitability. AA is just 0.67% compared to 1.71% in the first example.

This is the effect of flattening the prize pool. As we have seen, when the prizes are similar in size, laddering is much more important than playing for the win. Ax hands can all be shoved because the Ace blocker increases the chance of everyone folding. AA goes down in value because most of the time it will just take down the blinds as it rarely gets called. It has not one but two Ace blockers making calls even less likely. The small pairs go down in value because they unblock the likely calling ranges and don't perform well when they are called.

So many normally playable hands in this example are close to breakeven. It is never that much of a mistake to shove in spots like this because everyone else is incentivised to fold. Even shoving 72o is only a 0.19% mistake.

Finally, let's look at the Small Blind calling range:

100% **AA** +3.27	100% **AKs** +0.09	0% **AQs** -0.58	0% **AJs** -1.02	0% **ATs** -1.44	0% **A9s** -2.04	0% **A8s** -2.31	0% **A7s** -2.65	0% **A6s** -2.98	0% **A5s** -3.01	0% **A4s** -3.19
0% **AKo** -0.16	100% **KK** +1.19	0% **KQs** -3.02	0% **KJs** -3.39	0% **KTs** -3.73	0% **K9s** -4.17	0% **K8s** -4.49	0% **K7s** -4.59	0% **K6s** -4.70	0% **K5s** -4.85	0% **K4s** -4.96
0% **AQo** -0.89	0% **KQo** -3.49	100% **QQ** +0.39	0% **QJs** -4.02	0% **QTs** -4.15	0% **Q9s** -4.41	0% **Q8s** -4.69	0% **Q7s** -4.92	0% **Q6s** -4.95	0% **Q5s** -5.07	0% **Q4s** -5.16
0% **AJo** -1.37	0% **KJo** -3.88	0% **QJo** -4.56	0% **JJ** -0.11	0% **JTs** -4.12	0% **J9s** -4.31	0% **J8s** -4.59	0% **J7s** -4.83	0% **J6s** -5.06	0% **J5s** -5.14	0% **J4s** -5.23
0% **ATo** -1.82	0% **KTo** -4.25	0% **QTo** -4.70	0% **JTo** -4.65	0% **TT** -0.60	0% **T9s** -4.22	0% **T8s** -4.49	0% **T7s** -4.73	0% **T6s** -4.96	0% **T5s** -5.26	0% **T4s** -5.31
0% **A9o** -2.47	0% **K9o** -4.74	0% **Q9o** -4.97	0% **J9o** -4.86	0% **T9o** -4.76	0% **99** -1.13	0% **98s** -4.35	0% **97s** -4.57	0% **96s** -4.80	0% **95s** -5.08	0% **94s** -5.35
0% **A8o** -2.75	0% **K8o** -5.08	0% **Q8o** -5.26	0% **J8o** -5.16	0% **T8o** -5.05	0% **98o** -4.90	0% **88** -1.49	0% **87s** -4.50	0% **86s** -4.72	0% **85s** -5.00	0% **84s** -5.27
0% **A7o** -3.11	0% **K7o** -5.19	0% **Q7o** -5.52	0% **J7o** -5.41	0% **T7o** -5.30	0% **97o** -5.13	0% **87o** -5.05	0% **77** -1.88	0% **76s** -4.63	0% **75s** -4.91	0% **74s** -5.18
0% **A6o** -3.46	0% **K6o** -5.30	0% **Q6o** -5.54	0% **J6o** -5.66	0% **T6o** -5.55	0% **96o** -5.37	0% **86o** -5.28	0% **76o** -5.19	0% **66** -2.26	0% **65s** -4.80	0% **64s** -5.07
0% **A5o** -3.49	0% **K5o** -5.46	0% **Q5o** -5.67	0% **J5o** -5.74	0% **T5o** -5.86	0% **95o** -5.67	0% **85o** -5.58	0% **75o** -5.49	0% **65o** -5.37	0% **55** -2.64	0% **54s** -4.96
0% **A4o** -3.68	0% **K4o** -5.58	0% **Q4o** -5.77	0% **J4o** -5.84	0% **T4o** -5.91	0% **94o** -5.95	0% **84o** -5.87	0% **74o** -5.77	0% **64o** -5.65	0% **54o** -5.53	0% **44** -3.02
0% **A3o** -3.80	0% **K3o** -5.67	0% **Q3o** -5.84	0% **J3o** -5.91	0% **T3o** -5.98	0% **93o** -5.97	0% **83o** -6.11	0% **73o** -6.01	0% **63o** -5.90	0% **53o** -5.78	0% **43o** -5.90
0% **A2o** -3.89	0% **K2o** -5.75	0% **Q2o** -5.92	0% **J2o** -5.99	0% **T2o** -6.06	0% **92o** -6.05	0% **82o** -6.14	0% **72o** -6.28	0% **62o** -6.16	0% **52o** -6.04	0% **42o** -6.16

You may be surprised that even AKo is a fold here and AKs only makes us 0.09% of the prize pool. This is not unlike a satellite where you have to fold hands the majority of players would consider monsters. Although most hands are a fold here, the profitability of hands are not as severe as our original calling range. Calling AQs wrongly here costs us 0.58% and calling AKs correctly earns us 0.09%, a 0.67% difference. In the first calling example the difference between a bad call with ATs and a good call with AJs is 0.53%. Here calling wrongly with JJ loses us 0.11% and calling rightly with QQ earns us 0.39%, a 0.50% difference. The difference between breakeven 99 and profitable TT in the first calling range is 0.95%.

The reason why calling mistakes are smaller, even though the calling range itself is tighter, is because we are up against more Ax hands we dominate when we do call. This is a range we would snap call in a less ICM severe situation, we just don't want to do it now when laddering is so important.

We have gone over a lot of similar examples so please do not try and

memorise these ranges. This exercise was less about comparing range to range and more about looking at the difference between a bottom of your range mistake and a bottom of your range correct call/shove.

Betting and shoving mistakes are much more forgiving in ICM pressure situations. You can always make your opponents fold even if your hand is bad. A calling mistake by comparison is a disaster. Get your calling ranges wrong by one pip and you bleed equity. It is better to make a bad fold than a bad call when you are risking your tournament life.

The ultimate takeaway from this experiment is that in your self study, devote more time to honing your calling ranges. Study them so much you can recite them off by heart. If you make a troubling call in a tournament, review it after. Knowing your calling ranges makes understanding your betting ranges easier anyway. Knowing the bottom of your range in calling spots is a crucial skill in poker tournaments.

Key Takeaways

- A betting mistake is less costly than a calling mistake
- A good call earns you more than a good shove because you double your stack when you win, but a good shove often wins you a smaller pot
- Blockers make shoves more profitable
- The tighter your range the more a mistake compounds
- If in doubt, it is better to make a bad fold than a bad call

Things the pros don't know

- Calling ranges are much more important to study than betting ranges

Chapter 9: Game selection

Game selection is vital if you want to maximise your profitability. Indeed, in many cases game selection can make the difference between being a winning player and a losing one. I've probably seen more careers fail due to poor game selection than any other single reason. One memorable example was a player who in the early 2010s was one of the most profitable players in the history of online poker, yet in the words of David Lappin "never had a pot to piss in" and in the words of many a Who Wants To Be A Millionaire host, "left (the game) with nothing". The reason was incredibly simple: this player completely crushed everything up to $50 online, but lost above that level. His career followed a sad recurring pattern

1. Play tournaments $50 and below (staked), and crush them
2. Build a bankroll to be able to go it alone
3. Lose that bankroll playing higher games, get staked again and return to stage 1

There's a lot of ego in poker. One of the ways it manifests itself is that players lose sight of the primary goal (to win as much money as possible) and instead focus on wanting to play higher and higher games, either for the thrill of gambling for big stakes or the status of being seen as a high stakes player.

The best game selection advice remains finding places to play where there are not many tough regulars and lots of online satellite qualifiers. Smaller online poker rooms like iPoker in Europe are much softer than huge sites like PokerStars because the small field and poorer software puts professional players off. Much in the same way that a dive like The Flamingo is going to be much softer to play in than The Venetian in Las Vegas. I spent a lot of my career researching up and coming online poker rooms because they don't attract tough regulars.

Likewise, a tournament with a lot of satellites running for it is inevitably going to be softer. I know I wrote the book on satellites and strongly argue

that good satellite regulars are among the best MTT grinders in the world, but it still stands to reason that satellite winners will typically be out of their depth in the bigger events they won seats to. In fact some higher stakes tournaments are softer than similar low stakes tournaments because of the abundance of satellite winners. The $215 Sunday Million is softer than the Big $55 because it has so many satellite qualifiers. The World Series of Poker Main Event is softer than some of the preliminary $1,500 bracelet events because it is a bucket list event for satellite winners.

With that out of the way, let's look at the specific ways ICM should influence game selection.

Size of field

The more players in a tournament, the softer it will be. In the words of my friend and legendary podcaster/author Andrew Brokos, "if a tournament has 1,000 players it must be good, because there aren't 1,000 good players".

The more people left in a tournament the bigger your edge should be. You will have a bigger edge with two tables left than when you are down to five players. You will have a bigger edge at a nine max table than a six max table. This might go against the consensus in poker that short handed is softer. You might often see inexperienced players make short handed mistakes, but the more bad players who remain in the field boosts your own ROI.

To see this you only need to look at winrates for the best SNG players in the world, which are often barely 10% ROI for single table tournaments. This is why SNG regulars tend to migrate to tournaments because they enjoy a bigger edge. Most regulars greatly overestimate their edge on one table but equally underestimate their edge with two tables left, or more.

The more players left, the more bad players will tend to be left. When a bad player makes an error it improves your equity, even if they are on another table. Every mistake gets divided up between the winning players left in the tournament. Sometimes in a hand the equity from one bad player goes directly to another bad player, who will then make bad decisions with a bigger stack. Bad players have a compounding effect on your equity.

Does this mean we think you should devote all your time to 10,000 runner fields? No. In fact we think the best advice for most MTT grinders from an ICM perspective is to concentrate on small field tournaments, with some shots at larger field tournaments thrown in.

There are three reasons why you should probably concentrate on MTTs with fields around the 50-300 runner mark, rather than 600-10,000 runner fields.

1) ICM Practice
Players who started in SNGs like I did naturally understood ICM because it was the biggest part of the game. Then we saw ICM fall out of favour with the poker community for a while, but now everyone realises they need to understand it again. 75% of the private coaching I do is people who realise they have major ICM leaks.

When you play one table SNGs ICM is the most important aspect of poker strategy. For people who play 10,000 runner fields, ICM is not as big a part of what they do. They know they should play tight on the bubble but they only make a final table every 1,000 MTTs on average, so ICM is not as obvious to them. Unfortunately for them that means when they do make a final table they often make massive ICM mistakes, which are amplified because the prize pools are so big compared to the buy-in. An ICM mistake in the $22 Mini Sunday Million might cost you $3,000 in equity, for example.

If you play 200 runner fields, however, you will make the final table every 20 tournaments on average. You get to experience ICM extreme situations much more often and practice what you have learned in books like this. You will have the ranges drilled down and have an innate understanding for things like Bubble Factor, when to ladder, what a good deal looks like and so on. These things will be second nature to you for when you do actually go deep in a major event.

I once wrote a controversial article where I said I would take an average mid stakes online MTT grinder two tables out in the WSOP Main Event over Irish poker legend Andy Black. Andy is a great live poker player but had only made 15 notable live final tables at the time. I would much rather take the

guy who has made thousands of final tables and has his ranges drilled in.

2) Variance Reduction

If you had unlimited time and unlimited patience then you should only ever play 10,000 runner fields because you will have the greatest edge in them. The best players in the world probably have a 400% edge in the WSOP Main Event, in a soft 100 runner live game it would not be 100%, in a 45 person field it would be about 40%, in an SNG it might be 20%. Variance and ROI have a proportional relationship, the bigger the field the bigger the edge, but also the bigger the variance.

The bigger the field size the bigger your sample size of tournaments has to be to realise your edge. In my own 14 year career I have never had bigger than a $20,000 downswing but it is normal for people to play 10,000 runner fields to have losing years. You don't need a massive sample to realise your edge when the field sizes are 100-300. This is one of the reasons why Super High Roller tournaments, which tend to have 30-50 runners, thrive despite being made up of tough regulars, you might only need a sample of 500 MTTs.

Let's put some numbers on this.

Looking at the flagship online poker tournament, the $109 Sunday Million at PokerStars. Assume it gets 7,000 runners on average each week and you have a 25% edge in this tournament. Using the tournament variance calculator at **www.primedope.com** you can see what happens if you played that event every Sunday for 10 years (520 game sample):

20 Sample runs

Legend:
- Best run
- Worst run
- Mean
- Confidence Intervals (70%, 95% & 99.7%)
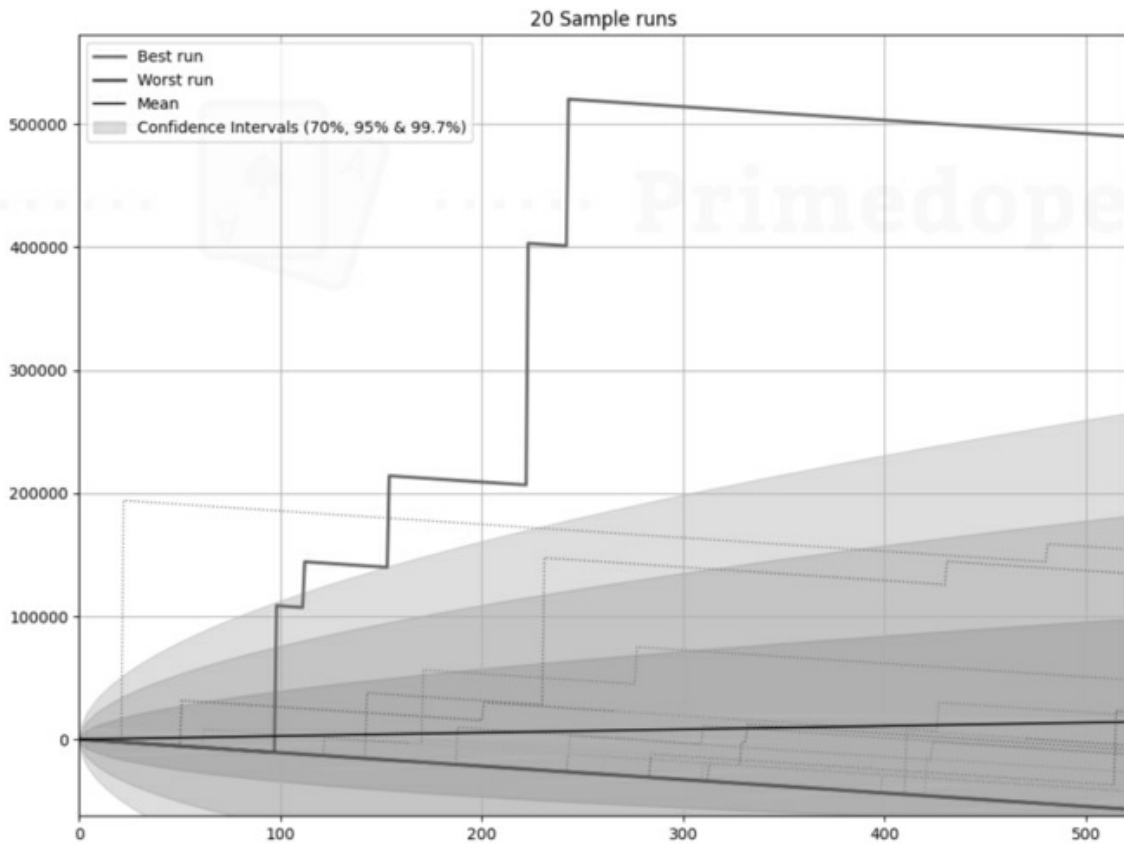
The graph above shows 20 random samples from 1,000 simulated samples. As you can see there is one massive outlier where we win almost $500k in profit but most of our runs end in a loss. Our EV is just $14,170 with a standard deviation of $83,632. With a bankroll of $10,000 (100 buy-ins) our risk of ruin is 86.5% and probability of loss is 56.9%

Compare that to the €109 SuperNova on Sundays at Unibet, which gets closer to 300 runners every weekend.

20 Sample runs
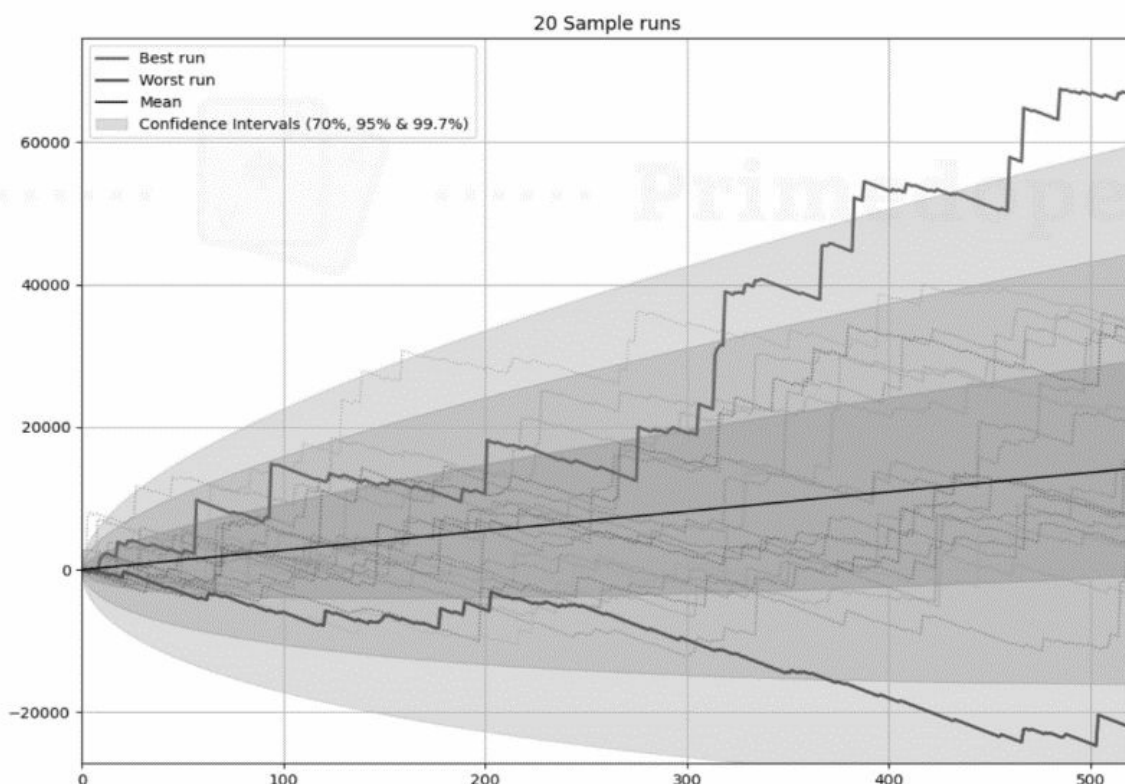
As you can see our 20 random samples are all closer together but with lower upside when we run great. Our EV is $14,170 and our standard deviation is $15,115. Our risk of ruin is now just 15.10% and our probability of loss is just 17.3%.

The upside is obviously much greater in the Sunday Million but 56.9% of the time we will lose money playing it every weekend for a decade. That only happens 15.10% of the time in the SuperNova. You would need to play a sample in the tens if not hundreds of thousands to realise your edge in a massive tournament like the Sunday Million or the WSOP Main Event. When you do the simulation for 10,000 tournaments then your risk of ruin goes down to 30% and probability of loss goes down to 0. This is simply never going to happen, you can never realise your edge in a tournament like this because you will never have time, but you can easily realise your edge in a 300 runner field event like the SuperNova.

Players who concentrate exclusively on large field tournaments often go broke and frequently have to get staked to keep playing where they will be in

makeup for long periods, or they need a massive bankroll. I have never had to be staked to play, other than selling pieces, because I have always focussed on low variance formats.

It's good to take shots at bigger field events, in fact shot taking is a legitimate bankroll strategy. Binking a large field MTT is a springboard to playing higher stakes - you cannot really grind your way to the high rollers. I now play large field events because I am at a stage in my career where I have other income streams for when I go on downswings. For up and coming players and those who want longevity in the game, concentrating on smaller fields will keep variance at bay.

3) Mental Game
If those simulations for the Sunday Million scared you, that neatly introduces the third reason why I advocate playing smaller field MTTs. Not having to deal with the swings of large field MTTs and having practiced all the tough ICM spots in smaller field MTTs over and over again will naturally give you fewer mental game problems to deal with. Dealing with long losing stretches can finish off a lot of good players and the pressure of tough spots in big moments can lead a player to perform poorly when it matters the most.

I have never had more than a $20,000 downswing in my career but I know very talented players who go long periods questioning if they will ever win again? Not having to rely on staking or being in makeup means you will have a much clearer head when you play poker. Knowing you have been in this situation thousands of times before in a tough ICM spot makes it easier to do the right thing and makes it easier to deal with when the cards do not fall your way.

Overlays
It stands to reason that a large guarantee on a tournament will increase your profitability but the bigger the guarantee, the bigger the field, and the bigger your sample size needs to be to realise your edge. A nice middle ground between a big guarantee and playing low variance small fields is to game select for tournaments that will likely miss their guarantee, what we call an overlay. If a $109 ($100+9) tournament has a $10,000 guarantee then the assumption is that at least 100 people will play it and the operator will

bag $900 in rake. However, if just 50 players enter then only $5,450 is collected, leaving the operator to cover the outstanding $4,550.

Overlays are always good for poker players and terrible for operators (though some use overlays well as a loss-leading marketing tactic). Overlays are an instant equity boost and practically speaking they mean you are playing for a bigger prize pool while only having to navigate a small field. In my own game selection I have a basket of tournaments I always register, I always register PKO tournaments at the start (more on that shortly) and then if I have more room for tournaments I keep an eye on tournaments that look like they are going to overlay and I late register them.

We could do a complicated ICM calculation but it is easier than that, when a tournament overlays simply divide the guaranteed prize pool by the number of players, including bustouts, to get your new equity. Let's say it is a $5,000 guaranteed tournament with a $11 ($10+$1) entry fee. 500 players have to enter this event to cover the guarantee if the operator wants the rake. Let's say that only 350 actually enter, meaning there is a $1,150 overlay. At the start of the tournament your equity would be $10, but with this overlay we divide the $5,000 prize pool by 350 and we get a new equity of $14.28. That is a 42.8% increase. To put it another way, a player with a negative ROI of minus 20% would still have an equity of $11.40 in this tournament ($14.28 minus 20%), giving them an expectation of +0.4% after rake. A winning player with a 20% edge has an expectation of $17.12 for an $11 MTT, which is absolutely crushing by any player's standard.

Overlays are also good for your hourly rate because you have to navigate through fewer players for a bigger prize pool. The calculation above does not even account for the ICM boost that late registering provides, which could easily add another 20% onto that equity.

Late registration
We have already covered the ICM benefit of late registration but we wanted to touch on it again, this time in the context of edge and small fields vs large fields. A lot of professional poker players know the benefits of late registering but get confused about what the best tournaments are to late register. Late registering an event with an overlay is the best outcome and late

registering a tournament which is already close to the money is the next best thing. Beyond that there is another consideration that most professionals get wrong.

A professional will see a tournament where they can late register and come in with a close to average stack of 30 big blinds and assume that is best for their ROI. They have a deeper stack meaning they have more room to manoeuvre and they are not far off the average, so they haven't lost much ground. Much better than coming in at seven big blinds and being forced to go all-in on the first orbit, right?

Actually, no.

This might be one of the most counterintuitive things you'll discover in this book, but coming in short is much more profitable and better for your hourly rate.

Most professionals do not like coming in short stacked because they think it turns a normal MTT into a hyper MTT, because they are forced to make a move. This is not true, it only seems like that because you will bust often in this spot. When you double up a couple of times, because the structure is slow, you are now in a position to exert your edge. Unlike an actual hyper where everyone stays short stacked for the whole tournament.

Coming into a tournament as a micro stack is actually incredibly profitable. People assume that the deeper you are, the more profitable your stack is, which is true once your stack gets above a certain point. Once you are at 50 big blinds or more you have more tools in your arsenal - you can check raise, 3-bet fold, 4-bet, 4-bet fold, light 5-bet, float, double barrel, triple barrel etc. You have more ways to exert your edge.

However, there is a danger zone around the 20-30 big blind mark which is unprofitable to play. I'm not entirely sure why this is, but I suspect it is because you are in that awkward zone where you have to bet/fold a lot and you have a stack depth where it is profitable to reshove on you. There are hands that flop well so you don't want to shove, but you have to fold 10% of your stack a lot of the time when you get 3-bet.

Underneath this zone, there is an inflection point where hands start to become profitable again, not because you can exert edge but because you are always getting really good pot odds to play them. A 10-15 big blind stack, for example, you can open shove a lot of hands and increase your stack by more than 10% if everyone folds. You can increase your stack massively by squeezing in multi-way pots. If you defend and hit a top pair, you can go with it without worrying about domination. The lower you go, the more profitable hands become. There is a reason why cash games do not allow you to buy-in this shallow, because it is incredibly profitable.

The most profitable spot of all would be to buy-in for one ante. At a table with eight other players, some of them are going to fold and you will often find yourself with 25% equity but getting a 8 to 1 return on your money (the 8 antes you can win). 75% of the time you will bust the first hand but you win 2.25 antes on average (this corresponds to a +125% ROI) - no skill required.

Most hands are profitable to shove and a lot to call when you are shallow and all your decisions are easy. If you double up you have 12 big blinds, which is another profitable stack size where you can profitably shove a lot of hands, again all your decisions are easy. If you double up again, now you are in the tricky zone of 24 big blinds but by this time you are probably quite close to the money. Had you come in at this depth, you would have had tricky spots from the start.

The reason why these stack depths are so profitable is because as well as getting great odds to shove and call, they benefit by 'stealing fold equity' from other stacks. That means that they get leverage from the other stacks at the table not wanting to go against each other.

Let's look at an example to illustrate this. In this example we max late register and half the field needs to bust before we get to the money. Our starting stack is 5,000 chips and the blinds are 125/250, or 20 big blinds. We are in the MP2 seat. The average stack is 36,000 chips and this is the table makeup:

Position	Stack
UTG	20,000
EP	40,000
MP1	50,000
MP2	**5,000**
HJ	30,000
CO	60,000
BU	20,000
SB	40,000
BB	30,000

When you run this spot through Holdem Resources Calculator, this is what it advises MP2 to do:

Action	Range
Min Raise	11.9%, 77+ A6s+ AJo-A8o KJo+
Shove	3.9%, 66 AQo+ KTs+ QTs+ JTs

Now let's say we are in the exact same position, buying in for 5,000 chips where the average is 36,000 and half the field needs to bust before we get to the money. The only difference is the blind level is now 500/1,000 giving us just five big blinds. Now what does HRC suggest we do?

Action	Range
Min Raise	0%
Shove	37.3%, 22+ Ax K2s+ K7o+ Q6s+ Q9o+ J7s+ JTo T8s+ 97s+ 87s

We have gone from being able to play 15.8% of hands to being able to profitably shove 37.3% hands, even though everyone has the same number of starting stacks. We also shove our entire range which makes the hands much easier to play. In the 20 big blind example we min raise most of our range and will have to fold the bottom of the range if we are 3-bet all-in.

Let's look at the same spot again, but everyone has the starting stack of 5,000 chips or five big blinds (this is not as preposterous as it sounds, some sites put all the late registrations on the same table). Now our range looks like this:

Action	Range
Min Raise	0%
Shove	30.0%, 22+ A2s+ A3o+ K6s+ KTo+ Q8s+ QTo+ J8s+ JTo T8s+ 98s

This time we are much wider than we were when we had 20 big blinds, almost double the hands, but 7.3% tighter than when we are the shortest stack at the table with five big blinds. We are wider than example 1 because every hand becomes more profitable from a pot odds perspective, if we pick up the blinds and antes we increase our stack by 50%. We are tighter than example 2 because in this example we do not 'steal fold equity' from the bigger stacks, because there are none.

To illustrate what we mean, let's look at what the Button's response is in each example. The Button has 20,000 chips which covers us comfortably but is a vulnerable stack compared to the rest of the table, so it's an interesting stack from a calling perspective:

Example	Button response
Example 1 min raise	***Call:*** 10.0%, 88-44 ATs-A8s AJo-A9o KJs+ KJo+ Q9s+ JTs T9s ***3-bet x2.5:*** 8.6%, 99+ AJs+ AQo+ Q7s-Q6s QTo+
Example 1 shove	***Call:*** 4.9%, KK+ JJ-88 AQs AQo
Example 2 shove	***3-bet all-in:*** 15.7%, 44+ A5s+ A8o+ KTs+ KJo+
Example 3 shove	***Call:*** 9.5%, 66+ A8s+ ATo+

When we have 20 big blinds and open raise, the Button can profitably call with 10% of their range and 3-bet us with 8.6% of their range. When we shove 20 big blinds the Button can only call with 4.9% of hands (this is a very tight range because 20 big blind shoves are usually very strong).

When we have five big blinds the Button is forced to reraise all-in when they have a hand and can do so with 15.7% of hands. That is less than the 18.6% of hands that they can respond with when we min raise a 20 big blind stack. Not only do they have to fold more hands, the fact that they are committing ¼ of their stack means they have to isolate against us, which they would not be happy about with two big stacks behind them.

When everyone has five big blinds the calling ranges are tight again, 9.5% of hands, but we have shoved a tighter range initially than in example 2.

You don't want to come into any tournament with fewer chips than the average stack, but when you late register and are inevitably coming in shorter than average, a shallow starting stack is much easier and more profitable to play than a 20-30 big blind stack, everything else being equal.

One last note on stealing fold equity, a simple but profitable hack is to not quite shove your stack. If your 5BB stack is 5,000 chips, bet 4,950 instead, with the intention of calling for the last 50 if you get reraised. Now if another player wants to put you all-in they have to raise it up to at least 10,000 or they will have to at least bet 1,000 on a future street if the pot goes multiway post flop. This will make it less enticing to reraise you in the first place or at least it will leverage the bigger stack to get the other players to fold.

Which tournaments to late register?

We've already shown you the ICM benefits of late registration and overlays, but let's look at late registration in the context of some other variables. We said that smaller field tournaments, while less profitable, are the best option for most grinders. Is it better to late register a small field tournament or a large field tournament? Common sense would say the large field has the biggest upside but small field means a win is in nearer reach.

In this first example we have a $1 MTT with a 30 runner field where we late register with our 1,000 chip starting stack with five players remaining.

Seat	Potential Payout	Stack	Equity
1	$15	12,000	$9.88
2	$10	7,000	$7.29
3	$5	6,000	$6.56
4		3,000	$3.67
5		1,000	$1.30
6		**1,000**	**$1.30**

As you can see we get an instant ICM boost of 30% for coming in late. Now let's make it 120 runners, 11 players remain:

Seat	Potential Payout	Stack	Equity
1	$22	12,000	$10.33
2	$15	12,000	$10.33
3	$10	7,000	$7.18
4	$7	7,000	$7.18
5	$4	6,000	$6.39
6	$2	6,000	$6.39
7		3,000	$3.56
8		3,000	$3.56
9		1,000	$1.27
10		1,000	$1.27
11		1,000	$1.27
12		**1,000**	**$1.27**

This time our equity is $1.27, which is 3% less than if we had been in a field half the size. Common sense prevails, with fewer players you are much closer to the big payouts which is reflected in your equity. Even though the top prize is bigger in the larger tournament, the fewer players to navigate, the more your stack is worth.

What about the effect of the payout structure on late registration? If the first prize is top heavy, would late registration have less of an impact? Let's do the same example as last time, but with a more top heavy payout structure:

Seat	Potential Payout	Stack	Equity
1	$30	12,000	$10.88
2	$15	12,000	$10.88
3	$8	7,000	$7.13
4	$4	7,000	$7.13
5	$2	6,000	$6.27
6	$1	6,000	$6.27
7		3,000	$3.36
8		3,000	$3.36
9		1,000	$1.17
10		1,000	$1.17
11		1,000	$1.17
12		**1,000**	**$1.17**

Our equity is $1.17 which is 10% less than in the previous example, which is quite a considerable hit. In this example the first prize has such an outsized influence on our equity we don't have as much benefit to late registering as we do in another format.

One final example some of you may be familiar with and that is the flattest payout structure of all, the satellite. What happens when all the other details are the same but the prizes are of equal value?

Seat	Potential Payout	Stack	Equity
1	$10	12,000	$8.81
2	$10	12,000	$8.81
3	$10	7,000	$7.23
4	$10	7,000	$7.23
5	$10	6,000	$6.68
6	$10	6,000	$6.68
7		3,000	$4.14
8		3,000	$4.14
9		1,000	$1.56
10		1,000	$1.56
11		1,000	$1.56
12		**1,000**	**$1.56**

Our equity is $1.56 which is a whopping 56% increase and the biggest equity boost of all. Given all prizes are of equal value in a satellite it's all about the mincash rather than the top prize.

The only format in poker where late registration is not instantly profitable is progressive knockout (PKO) tournaments and that is because whenever a player is eliminated their bounty is removed from the prize pool. Every elimination sees at least 25% of a buy-in removed from the prize pool and the later you register, the smaller the prize pool you are playing for. Think of that 25% of a buy-in as an additional rake you have to pay. In a 100 runner $215 PKO, every player eliminated is like an extra $0.50 in rake you have to pay (the $50 bounty divided by 100 players). This isn't so bad if you late register near the start of the tournament where only a few players have bust, but terrible if you register at the last minute.

Late registering after five people bust a $215 PKO with 500 runners is not so bad, that's just an additional rake of $1. Late registering that same PKO just before registration ends and 100 players have been eliminated is much worse, that is like adding an extra rake of at least $20 before you even start. Because of the gambley nature of PKOs you can also expect a lot more eliminations than usual at the start, so if you can't register in the first 15 minutes of the tournament it's probably not worth it.

To frame it a different way, if you register on time for a PKO you actually gain equity from all the players who are going to register late. Your $200 of equity at the start of a $215 PKO is actually going to be worth a little more than $200. Just as there are implied odds when you play a speculative hand, there is implied equity when you early register a PKO. Trying to calculate such implied equity would be near impossible, so let's just say you are always better off registering on time, especially in PKOs with a long late registration period.

We have already made the case for poker players to opt for smaller field MTTs and lower variance formats, if they late register all their tournaments too they really are printing money. If a small losing player made a habit of max late regging 100-200 runner field tournaments, with shallow stacks and a potential overlay, they could easily become a profitable player regardless of how badly they butcher their hands at the tables. A small winning player could become a very profitable player doing the same thing. Do this at smaller soft sites in tournaments with lots of satellite winners and you are well on your way to eclipsing a lot of talented professional players who needlessly invite variance onto themselves.

Key Takeaways

- Small poker rooms and events with satellite winners are typically softer
- The bigger the field, the bigger your win rate will be, but there will be more variance
- An overlay is an instant boost to your equity and you should seek out tournaments that might miss guarantees
- Don't late register PKOs because you will not be able to win the bounties that have already been won

Things the pros don't know

- The more players left in a tournament, the bigger your edge should be
- If you specialise in smaller fields you will get better at ICM,

experience less variance and have a steadier mental game

- A shallow stack (15BB or less) is more profitable than a 'playable' stack (20-30BB) when you late register, assuming the same starting stack
- The smaller the field or flatter the payout structure, the bigger the equity boost gained from late registering
- A losing player might become profitable simply by late registering small field tournaments likely to overlay

Chapter 10: Short stack

In the following three chapters we are going to look at practical hand examples that focus on a very important aspect of ICM, your relative position in the field. We have already explored how the more chips you have the less each individual chip is worth, now let's look at the strategic adjustments you have to make with that in mind.

One very important note before we begin, the next three sections will focus mostly on preflop calling and shoving ranges. The solvers we used to produce these are preflop solvers. They do not take into account post flop playability, for example a more robust solver might advise you to shove A7o but open raise JTs, because the rag Ace has good raw equity preflop but poor equity realisation post flop, whereas the JTs can play well on several streets. The reason we have gone down this route is twofold. First of all, we don't want you to memorise any of these ranges, we simply want you to pay attention to the relative differences. We want you to see how ICM expands or contracts your range because of relative stack sizes, so when you find yourself in similar positions you have an idea how to adjust. Secondly, most of you will be playing shallow stack online tournaments where the ICM heavy stages of the tournament are mostly preflop anyway, so it's a better way to learn first principles before you take those lessons to deeper stacked tournaments.

We begin with the most common situation you will face in a tournament and that is when you are a short stack. Most tournaments you play sadly will involve you gradually getting shorter and shallower until you take a stand and bust out. Also if you are late regging your tournaments (which we hope you are after we argued the case for doing so) you will be starting with a short stack. In this context by short stack we initially mean short relative to the field, not below a particular big blind threshold.

In the following examples we are going to make the player in MP2 the short stack at the table and first of all look at the shoving ranges for them. This is a final table situation and to begin with as a baseline we will look at what happens when everyone has the same stack size. This is the final table:

Player	Potential Payout	Stack	Equity
1	$49	10,000	$15.40
2	$32	10,000	$15.40
3	$18	10,000	$15.40
4	$12	10,000	$15.40
5	$9.50	10,000	$15.40
6	$7	10,000	$15.40
7	$5	10,000	$15.40
8	$3.60	10,000	$15.40
9	$2.50	10,000	$15.40

Before we look at the ICM ranges, let's have a quick look at what MP2's shoving range would be if it was folded to them, and the calling ranges of the players left to act, if this was a non-ICM ChipEV situation. Blinds are 500/1,000:

ChipEV Ranges MP2 Shove	
MP2 (10,000)	22.8%, 22+ A2s+ A8o+ K8s+ KJo+ Q9s+ QJo J8s+ T8s+ 98s 87s
Calling Ranges	
MP3 (10,000)	10.8%, 55+ A8s+ ATo+ KJs+
CO (10,000)	11.5%, 55+ A8s+ ATo+ KJs+ KQo
BU (10,000)	12.8%, 44+ A8s+ A9o+ KJs+ KQo
SB (10,000)	16.2%, 33+ A4s+ A8o+ KTs+ KQo QJs
BB (10,000)	19.8%, 22+ A2s+ A7o+ K9s+ KJo+ QTs+ JTs

Now here are the same ranges for our ICM influenced final table:

ICM Ranges MP2 Shove	
MP2 (10,000)	23.7%, 22+ A2s+ A9o+ A5o K4s+ KTo+ Q9s+ QTo+ J9s+ T9s
Calling Ranges	
MP3 (10,000)	4.7%, TT+ AQ+
CO (10,000)	5.3%, 99+ AJs+ AQo+
BU (10,000)	5.3%, 99+ AJs+ AQo+
SB (10,000)	5.3%, 99+ AJs+ AQo+
BB (10,000)	7.5%, 77+ ATs+ AJo+

MP2 can shove a little wider and as expected the shape of their range has changed a little. They can shove more suited Kings than in ChipEV, fewer small suited connectors and although they can shove the same amount of Ax, ChipEV can shove A8o while ICM drops that and replaces it with A5o.

You only need to look at the calling ranges to see why that is. Everyone in the ChipEV example can call with more than twice as many hands, so A8o performs well against them. In the ICM example the tighter ranges have more Ax in them, so A8o will be dominated but A5o has that A2345 straight out.

The other thing to notice is how little the calling ranges change in the second example. There is only a 2.8% difference between MP3 and BB, compared to a 9% difference in the ChipEV example. In fact the calling ranges for CO, BU and SB are all exactly the same. The only reason BB can call wider is they get to close the action so are not worried about another player calling too. This should once again hammer home how important it is to drill down on your calling ranges as a priority in your study away from the tables.

This is a non standard example, now let's make it a more realistic mix of stacks where MP2 is the short stack with 10,000 chips, or 10 big blinds. These are the equities at the start of the hand:

Player	Potential Payout	Chips	Equity
1	$49	26,000	$20.01
2	$32	23,000	$18.61
3	$18	20,000	$17.10
4	$12	19,000	$16.57
5	$9.50	16,000	$14.89
6	$7	15,000	$14.30
7	$5	14,000	$13.69
8	$3.60	12,000	$12.40
9	**$2.50**	**10,000**	**$11.02**

This is the table line up:

UTG	20,000
UTG+1	16,000
MP1	15,000
MP2	**10,000**
MP3	19,000
CO	23,000
BU	12,000
SB	26,000
BB	14,000

When everyone else folds and MP2 shoves, these are the GTO shoving and calling ranges:

ICM Ranges MP2 Shove Mix of Stacks	
MP2 (10,000)	18.8%, 33+ A2s+ ATo+ K9s+ KJo+ Q9s+ QJo J9s+ T9s
Calling Ranges	
MP3 (19,000)	5.5%, 99+ AJs+ AQo+
CO (23,000)	6.8%, 88+ AJs+ AQo+
BU (12,000)	5.5%, 99+ AJs+ AQo+
SB (26,000)	9%, 66+ AT+ KQs
BB (14,000)	9%, 66+ AT+ KQs

Although MP2 has the same amount of chips as in the previous example, they have a tighter shoving range because they are covered. The calling ranges are perhaps more interesting, the Button has a tighter calling range than the Cutoff because the Button is the second shortest stack at the table and the Cutoff can easily take the hit of losing against them. The Small Blind and Big Blind have the exact same range where normally the Small Blind would be much tighter. This is because the Small Blind is the chip leader. As you will see in all these examples, position plays a big role in the calling and shoving ranges, but as you can see here, relative stack size at the table perhaps plays the biggest role.

Let's look at the exact same situation, but make MP2 really short, this time they have five big blinds instead of ten. These are the new equities:

Player	Potential Payout	Chips	Equity
1	$49	26,000	$20.51
2	$32	23,000	$19.10
3	$18	20,000	$17.58
4	$12	19,000	$17.04
5	$9.50	16,000	$15.34
6	$7	15,000	$14.74
7	$5	14,000	$14.12
8	$3.60	12,000	$12.81
9	**$2.50**	**5,000**	**$7.36**

And these are the new GTO shove and call ranges:

ICM Ranges MP2 Shove Mix of Stacks (5BB Hero)	
MP2 (5,000)	28.2%, 22+ A2s+ A4o+ K6s+ K9o+ Q9s+ QTo+ J9s+ T9s
Calling Ranges	
MP3 (19,000)	8.7%, 77+ A9s+ ATo+
CO (23,000)	9.7%, 66+ A8s+ ATo+ KQs
BU (12,000)	11.3%, 55+ A8s+ A9o+ KJs+
SB (26,000)	15.2%, 44+ A4s+ A8o+ KTs+ KQo
BB (14,000)	44.1%, 22+ Ax K2s+ K6o+ Q5s+ Q9o+ J7s+ J9o+ T6s+ T9o 96s+ 98o 85s+ 75s+ 64s+ 54s

MP2 can shove significantly wider than in the previous example. Around five big blinds appears to be an inflection point where they worry less about elimination and instead see a lot more hands become profitable. Just as we mentioned in the Game Selection chapter, the one advantage of having a small number of big blinds is that more hands become profitable.

The calling ranges are much more interesting. They have all got wider but not by much, with one exception. MP3 goes from 5.5% to 8.7%, CO goes from 6.8% to 9.7%, BU goes from 5.5% to 11.3% and SB goes from 9% to 15.2%. The Big Blind, however, goes from 9% to a staggering 44.1%. We are seeing two things happening here. First of all, the other players can only widen by so much, they don't care about losing five big blinds as much as they worry about one of the other players coming over the top of them. This is an example of the way the short stack is able to 'steal fold equity' and use the leverage of bigger stacks to their advantage. The other big factor at play this time is position, when the bet is small, the Big Blind can call very wide because they also get to close the action. The Small and Big Blind had the same calling range in the previous example, now the Big Blind can call five times wider because closing the action is so advantageous against a micro stack.

In both of our examples MP2 is covered by the rest of the table, but it appears by how much they are covered is important. In the first example there were a lot of stacks close to MP2 relatively and stood to lose almost as

much if they called and lost, while in the second example nobody was worried about MP2 they were more worried about each other. Now let's look at what happens when MP2 is back to 10 big blinds, but everyone else at his table has double the stack they had previously. The difference between MP2 and the other stacks relatively is the same, but more chips are in play. These are the equities and chips at the start of the hand:

Player	Potential Payout	Chips	Equity
1	$49	52,000	$20.51
2	$32	46,000	$19.10
3	$18	40,000	$17.58
4	$12	38,000	$17.04
5	$9.50	32,000	$15.34
6	$7	30,000	$14.74
7	$5	28,000	$14.12
8	$3.60	24,000	$12.81
9	**$2.50**	**10,000**	**$7.36**

The equities are exactly the same, because the ratios are exactly the same as before. But everyone is much deeper except for MP2, so what does this do to the shoving and calling ranges?

ICM Ranges MP2 Shove Mix of Stacks (Double Stacks)	
MP2 (10,000)	19.3%, 22+ A2s+ ATo+ K9s+ KJo+ Q9s+ QJo J9s+ T9s
Calling Ranges	
MP3 (38,000)	6.4%, 88+ ATs+ AJo+
CO (46,000)	6.4%, 88+ ATs+ AJo+
BU (24,000)	7.5%, 77+ ATs+ AJo+
SB (52,000)	10%, 55+ A9s+ ATo+ KQs
BB (28,000)	12.2%, 44+ A7s+ ATo+ KJs+ KQo

Everything gets tighter for both MP2 shoves and the calling ranges, even though the exact same ratio between MP2 and the other stacks is in place as the example where they have five big blinds. We did this same simulation but we tripled the other stacks at the table and it produced pretty much the same ranges. We also did a simulation where the other players had triple stacks and MP2 had five big blinds and the result was very close to our original five big blind example. It was only when we gave MP2 three big blinds and everyone else triple stacks that the ranges really changed dramatically. Here are the equities for that example:

Player	Potential Payout	Chips	Equity
1	$49	78,000	$20.99
2	$32	69,000	$19.57
3	$18	60,000	$18.05
4	$12	57,000	$17.51
5	$9.50	48,000	$15.81
6	$7	45,000	$15.21
7	$5	42,000	$14.58
8	$3.60	36,000	$13.28
9	**$2.50**	**3,000**	**$3.61**

And here are the MP2 shove and call ranges:

ICM Ranges MP2 Shove Mix of Stacks (Triple Stacks & 3BB Hero)	
MP2 (3,000)	35.7%, 22+ Ax K3s+ K7o+ Q6s+ Q9o+ J8s+ JTo T8s+
Calling Ranges	
MP3 (57,000)	6.2%, TT+ ATs+ AJo+
CO (69,000)	9.4%, 88+ A7s+ ATo+ KQs
BU (36,000)	9.6%, 77+ A7s+ ATo+ KJs+
SB (78,000)	26.4%, 22+ Ax K8s+ QTs+ QJo+ JTs
BB (42,000)	100%, Any Two

We have given quite an extreme example here but it illustrates an interesting point. MP2 can shove really wide here for the obvious reason that more hands become profitable when they have so few big blinds. The Big Blind calls with any two here because the pot odds and fact that they close the action makes this three big blind call trivial. Look at how tight everyone else has to be here. The calling ranges are on par with all the other examples where MP2 was more of a threat. This is an example of how worried everyone should be about the other players at the table when pay jumps are involved. A short stack still has some leverage in the form of other players when ICM is a factor. Nobody at this table wants to get 3-bet and potentially have to play for stacks giving MP2 a chance to ladder up instead of them.

Generally speaking short stacks should target other short stacks whom they can hurt the most, but when you are super short it is more advantageous to target the chip leader's Big Blind. As you can see, they will call you the widest and nobody else at the table will want to play for fear of being squeezed by the big stack.

Short stack calling ranges

Now let's look at our calling ranges as a short stack in a variety of different line ups. We will mostly be covering the same dynamics as last time but with our Hero as the player facing a call. Like last time let's look at a situation where everyone has 10 big blinds as a baseline, the equities are as follows:

Player	Potential Payout	Chips	Equity
1	$49	10,000	$15.40
2	$32	10,000	$15.40
3	$18	10,000	$15.40
4	$12	10,000	$15.40
5	$9.50	10,000	$15.40
6	$7	10,000	$15.40
7	$5	10,000	$15.40
8	$3.60	10,000	$15.40
9	$2.50	10,000	$15.40

Before we look at the ICM ranges, let's see what the ChipEV calling ranges will be against MP2 and every player after that:

ChipEV Ranges Big Blind Call	
MP2 Shove (10,000)	25.0%, 22+ A2s+ A7o+ A5o K8s+ KTo+ Q9s+ QJo J8s+ T8s+ 98s 87s
Big Blind Call (10,000)	23.0%, 22+ A2s+ A5o+ K9s+ KTo+ QTs+ JTs
MP3 Shove (10,000)	30.4%, 22+ A2s+ A3o+ K7s+ KTo+ Q9s+ QTo+ J8s+ JTo T8s+ 97s+ 87s 76s
Big Blind Call (10,000)	27.9%, 22+ Ax K7s+ KTo+ Q9s+ QTo+ JTs
CO Shove (10,000)	35.1%, 22+ Ax K4s+ K9o+ Q6s+ QTo+ J7s+ JTo T7s+ 97s+ 86s+ 76s 65s
Big Blind Call (10,000)	31.2%, 22+ Ax K5s+ K9o+ Q8s+ QTo+ J9s+ JTo T9s
BU Shove (10,000)	44.7%, 22+ Ax K2s+ K5o+ Q3s+ Q9o+ J6s+ J9o+ T6s+ T9o 96s+ 85s+ 75s+ 65s 54s
Big Blind Call (10,000)	37.3%, 22+ Ax K2s+ K6o+ Q6s+ Q9o+ J8s+ JTo T8s+ 98s
SB Shove (10,000)	72.9%, 22+ Qx+ J2s+ J4o+ T2s+ T6o+ 93s+ 96o+ 84s+ 86o+ 74s+ 76o 63s+ 65o 53s+ 43s
Big Blind Call (10,000)	55.4%, 22+ Kx+ Q2s+ Q3o+ J4s+ J7o+ T6s+ T8o+ 97s+ 98o 87s

And now the exact same spot, everyone has 10 big blinds, but ICM is a factor:

ICM Ranges Big Blind Call	
MP2 Shove (10,000)	24.6%, 22+ A2s+ A9o+ A5o K4s+ KTo+ Q9s+ QTo+ J9s+ JTo T9s
Big Blind Call (10,000)	8.3%, 77+ ATs+ ATo+
MP3 Shove (10,000)	30.6%, 22+ A2s+ A7o+ A5o-A3o K2s+ KTo+ Q8s+ Q6s QTo+ J8s+ JTo T8s+ 98s
Big Blind Call (10,000)	9.2%, 66+ A9s+ ATo+
CO Shove (10,000)	41.8%, 22+ Ax K2s+ K8o+ Q2s+ Q9o+ J5s+ J9o+ T6s+ T9o 96s+ 86s+ 76s 65s 54s
Big Blind Call (10,000)	12.2%, 66+ A7s+ A9o+ KJs+ KQo
BU Shove (10,000)	52.0%, 22+ Ax K2s+ K6o+ Q2s+ Q8o+ J2s+ J8o+ T4s+ T8o+ 95s+ 97o+ 85s+ 87o 75s+ 64s+ 53s+
Big Blind Call (10,000)	17.3%, 55+ A4s+ A7o+ K9s+ KJo+ QJs
SB Shove (10,000)	87.4%, 22+ Jx+ T2s+ T3o+ 92s+ 95o+ 82s+ 84o+ 72s+ 74o+ 62s+ 64o+ 52s+ 53o+ 42s+ 32s
Big Blind Call (10,000)	29.9%, 44+ A2s+ A3o+ K5s+ K7o+ Q8s+ QTo+ J9s+

The later in position the player gets, the wider they can shove in ICM scenarios compared to ChipEV. This is because the later you are in position, the less likely your opponents are to have a strong enough hand to risk elimination. If you look at the calling ranges, they are much tighter in the ICM version. We can call with 55.4% of hands against the Small Blind in the ChipEV example but only 29.9% of hands in the ICM example (which might seem wide but look at how wide the Small Blind is shoving). Against MP2 we can call 23% of hands in the ChipEV example but only 8.3% in the ICM example. A profitable ChipEV call can be an ICM disaster, as we have seen in the previous chapter about some mistakes being more significant than others, once again we see that drilling down on your calling ranges is probably the most important thing to do first to boost your profitability in tournaments.

Now let's look at a more realistic table line up. In this example we have the same stacks as our original shoving examples, which are as follows:

Player	Potential Payout	Chips	Equity
1	$49	26,000	$20.01
2	$32	23,000	$18.61
3	$18	20,000	$17.10
4	$12	19,000	$16.57
5	$9.50	16,000	$14.89
6	$7	15,000	$14.30
7	$5	14,000	$13.69
8	$3.60	12,000	$12.40
9	**$2.50**	**10,000**	**$11.02**

And this time, the table line-up sees the short stack as the Big Blind:

UTG	19,000
UTG+1	23,000
MP1	12,000
MP2	26,000
MP3	14,000
CO	20,000
BU	16,000
SB	15,000
BB	**10,000**

Now let's look at what our short stacked hero should be calling when MP2 onwards shoves into their Big Blind.

ICM Ranges Big Blind Call (10 BBs)	
MP2 Shove (26,000)	24.9%, 22+ A2s+ A9o+ A5o-A4o K3s+ KTo+ Q8s+ QJo J9s+ T9s
Big Blind Call (10,000)	9.5%, 66+ A9s+ ATo+ KQs
MP3 Shove (14,000)	23.4%, 22+ A2s+ A9o+ K5s+ KTo+ Q9s+ QTo+ J9s+ T9s
Big Blind Call (10,000)	9.5%, 66+ A9s+ ATo+ KQs
CO Shove (20,000)	37.6%, 22+ Ax K2s+ K9o+ Q5s+ Q9o+ J7s+ JTo T7s+ T9o 97s+ 87s 76s 65s
Big Blind Call (10,000)	14.5%, 55+ A5s+ A8o+ KTs+ KQo
BU Shove (16,000)	49.1%, 22+ Ax K2s+ K7o+ Q2s+ Q8o+ J4s+ J8o+ T6s+ T8o+ 95s+ 98o 85s+ 87o 75s+ 64s+ 54s
Big Blind Call (10,000)	21.3%, 44+ A2s+ A5o+ K9s+ KTo+ QTs+
SB Shove (15,000)	82.8%, 22+ Qx+ J2s+ J4o+ T2s+ T5o+ 92s+ 95o+ 82s+ 85o+ 72s+ 74o+ 62s+ 64o+ 52s+ 53o+ 42s+ 32s
Big Blind Call (10,000)	38.0%, 33+ Ax K2s+ K5o+ Q6s+ Q8o+ J8s+ JTo T9s

Compared to the example where everyone has 10 big blinds we can call wider against late position shoves. This is because although in each example we are calling the same effective stacks and number of big blinds, there are more chips in play and our relative stack size matters. Every player has a Bubble Factor of 1.54 in the example where they all have 10 big blinds, but in this second example the Big Blind has a Bubble Factor between 1.35 and 1.43, depending on the opponent.

The above is not a dramatic change in the ranges, however, so let's see what happens when the Big Blind has just five big blinds, all other details are the same. These are the equities:

Player	Potential Payout	Chips	Equity
1	$49	26,000	$20.51
2	$32	23,000	$19.10
3	$18	20,000	$17.58
4	$12	19,000	$17.04
5	$9.50	16,000	$15.34
6	$7	15,000	$14.74
7	$5	14,000	$14.12
8	$3.60	12,000	$12.81
9	**$2.50**	**5,000**	**$7.36**

These are the ranges:

ICM Ranges Big Blind Call (5 BBs)	
MP2 Shove (26,000)	23.1%, 22+ A2s+ A4o+ K9s+ KJo+ QTs+ QJo JTs
Big Blind Call (5,000)	22.5%, 22+ A2s+ A4o+ K9s+ KJo+ QTs+ JTs T9s
MP3 Shove (14,000)	21.9%, 22+ A2s+ A7o+ A5o K9s+ KTo+ Q9s+ JTs T9s
Big Blind Call (5,000)	24.5%, 22+ A2s+ A4o+ K9s+ KTo+ Q9s+ JTs T9s
CO Shove (20,000)	34.2%, 22+ Ax K2s+ K9o+ Q6s+ QTo+ J8s+ JTo T8s+ 98s 87s
Big Blind Call (5,000)	33.5%, 22+ Ax K3s+ K8o+ Q8s+ QTo+ J8s+ JTo T8s+ 98s
BU Shove (16,000)	45.5%, 22+ Ax K2s+ K3o+ Q3s+ Q8o+ J7s+ J9o+ T7s+ T9o 97s+ 86s+ 76s
Big Blind Call (5,000)	45.0%, 22+ Ax K2s+ K3o+ Q4s+ Q8o+ J7s+ J9o+ T7s+ T9o 97s+ 87s 76s
SB Shove (15,000)	88.1%, 22+ Tx+ 92s+ 94o+ 82s+ 85o+ 72s+ 74o+ 62s+ 64o+ 52s+ 54o 42s+ 32s
Big Blind Call (5,000)	70.6%, 22+ Jx+ T2s+ T5o+ 94s+ 96o+ 85s+ 87o 75s+ 65s

The most significant difference is the Big Blind now calls incredibly wide compared to the previous examples. They can call 22.5% of hands against MP2, compared to 9.5% in the previous example. Against the Small Blind they can call 70.6% of their hands, compared to 38% of hands in the previous example. The message is simple, when we are super short we can profitably call with a wide range, which we have to do if we want to catch up. Again, our relative position is important here, now our Bubble Factor is between 1.21 and 1.26 depending on the opponent.

It's also worth noting that every opponent here at this table has to shove a little bit tighter than in the previous example. This is the power of 'stealing fold equity', they have to shove tighter because getting called by anyone but the short stack is going to sting even more as it may result in missing at least one extra pay jump. The presence of a short stack at the table should tighten ranges rather than expand them.

If we return to the example of 10 big blinds for the short stack but this time we double the size of every other stack at the table. A reminder about

the equities:

Player	Potential Payout	Chips	Equity
1	$49	52,000	$20.51
2	$32	46,000	$19.10
3	$18	40,000	$17.58
4	$12	38,000	$17.04
5	$9.50	32,000	$15.34
6	$7	30,000	$14.74
7	$5	28,000	$14.12
8	$3.60	24,000	$12.81
9	**$2.50**	**10,000**	**$7.36**

We saw this in the shoves chapter, they are exactly the same as our previous example because the same relative proportions exist. However, these are the new ranges:

ICM Ranges Big Blind Call (10 BBs - Double Stacks)	
MP2 Shove (52,000)	10.9%, 88+ A2s+ AJo+ KTs+ KQo
Big Blind Call (10,000)	5.9%, 88+ AJs+ AQo+
MP3 Shove (28,000)	14.8%, 55+ A2s+ ATo+ KTs+ KJo+ QTs+
Big Blind Call (10,000)	7.5%, 77+ ATs+ AJo+
CO Shove (40,000)	26.9%, 22+ A2s+ A7o+ A5o-A3o K5s+ KTo+ Q9s+ QTo+ J9s+ T9s
Big Blind Call (10,000)	13.8%, 44+ A7s+ A8o+ KJs+ KQo
BU Shove (32,000)	36.2%, 22+ Ax K3s+ K9o+ Q5s+ QTo+ J7s+ JTo T7s+ T9o 97s+ 87s 76s 65s
Big Blind Call (10,000)	20.4%, 33+ A2s+ A5o+ KTs+ KJo+ QJs
SB Shove (30,000)	81.9%, 22+ Qx+ J2s+ J3o+ T2s+ T5o+ 92s+ 95o+ 82s+ 85o+ 72s+ 75o+ 62s+ 64o+ 52s+ 54o 42s+ 32s
Big Blind Call (10,000)	44.3%, 22+ Ax K2s+ K3o+ Q4s+ Q7o+ J7s+ J9o+ T8s+ T9o

Even though the same relative proportions exist as in the example where our Hero has five big blinds, the ranges are considerably tighter across the board for shoves and calls. We have seen who covers whom and by how much matters, but number of big blinds also clearly matters. You need a much stronger hand to shove or call 20+ big blinds than you do 10+ big blinds, and your 10+ big blind range has to be tighter than your 5+ big blind for the most part too. Every decision in poker boils down to assessing risk and reward: when a shove gets through we always win the blinds and antes, but the shorter our stack is the greater this reward is relatively. Our Hero only has 10 or five big blinds in these examples, but everyone else at the table has more and that is what influences the tightness of the range.

When you compare this example to the original example with half the stack sizes and 10 big blinds for our Hero the same is true, with the exception of the later position ranges. Button and Small Blind can both still shove big stacks widely in each example because they are not worried about another big stack calling, and Big Blind can call a similar range in both examples, mostly because they are up against such a wide range.

As we stated in the chapter about the types of errors that cost the most equity, these examples really show how important it is to drill down on your calling ranges when you are short stacked and how the few chips you have are worth more to you. It's worth investing in an ICM solver to play around with these ranges yourself, and do other examples with different payout structures, blind structures, examples on the bubble or near bubble, see what the impact of other short stacks are, and so on.

In the next chapter we will look at the decidedly more fun stack size to play, when you are the chip leader.

Key Takeaways

- Position and relative stack size matter when shoving and calling
- The more a player covers you, the wider they can call
- The Big Blind can always call a short stack the widest because they get to close the action
- Once a short stack becomes a micro stack, they can shove and call much wider
- Being shortest does not mean you should play loose, if you have a lot of big blinds you should still play carefully

Things the pros don't know

- A short stack player will generally make everyone else at the table's range tighter, because busting before them would be a disaster
- A super short stack player should target the chip leader's Big Blind, because they will call them the widest and everyone else at the table will not want to engage with them
- Once again, study your calling ranges as a priority

Chapter 11: Big stack

There are few better feelings in poker than having the chip lead on the bubble or the final table of a tournament. Without even studying ICM, most people can intuit that you can relax more, take more risks and use your commanding lead to make the other players' lives a misery. Being the chip leader doesn't come around all that often, so it's important to know how far you can push a big stack from an ICM perspective.

We will revisit the same examples as last time, but this time from the perspective of the chip leader. A reminder of the equities at the start of the final table we are simulating:

Player	Potential Payout	Chips	Equity
1	**$49**	**26,000**	**$20.01**
2	$32	23,000	$18.61
3	$18	20,000	$17.10
4	$12	19,000	$16.57
5	$9.50	16,000	$14.89
6	$7	15,000	$14.30
7	$5	14,000	$13.69
8	$3.60	12,000	$12.40
9	$2.50	10,000	$11.02

And this is the line up of the table. As in the last example we have put the chip leader in MP2 and are assuming it has been folded to them. Blinds are 500/1,000:

UTG	12,000
UTG+1	15,000
MP1	19,000
MP2	**26,000**
MP3	10,000
CO	23,000
BU	16,000
SB	20,000
BB	14,000

These are the hands MP2 can profitably shove as well as the calling ranges from each seat, assuming the previous seat has folded:

ICM Ranges MP2 Shove	
MP2 (26,000)	23.0%, 22+ A2s+ ATo+ A5o-A4o K4s+ KTo+ Q9s+ QJo J9s+
Calling Ranges	
MP3 (10,000)	5.4%, 99+ AJs+ AQo+
CO (23,000)	3.8%, TT+ AKs AKo
BU (16,000)	3.8%, TT+ AQs+ AKo
SB (20,000)	3.8%, TT+ AQs+ AKo
BB (14,000)	6.8%, 88+ AJs+ AJo+

If you look back at the last chapter, these ranges are very similar to the first example we gave when everybody had 10 big blinds, almost identical. When we compare it to the next example in that chapter where there was a mix of stacks looking at it from the short stack's perspective, the leader here can shove 23% of hands compared to 18.8% of hands. The calling ranges here are close to half what they were when it was a short stack shoving.

No big surprises there; the leader can shove wider in the same seat because they can exert more ICM pressure and the chips are worth less to them than they are the other stacks. The other stacks have to call much tighter because they will be eliminated if they call and lose. MP3 can call wider than the next three positions and that is because they are a short stack, so have a lower Bubble Factor than everyone else.

It might surprise you that the chip leader here is not dramatically wider than in our initial short stack shove examples. This is because although they are the chip leader, they do not have a commanding chip lead. They have less than 17% of the chips in play and losing an all-in to most of the players at this table would harm them almost as much as the player facing elimination.

So what happens when all details are the same, but our chip leader has double their chip lead? First let's look at the equities in that situation:

Player	Potential Payout	Chips	Equity
1	**$49**	**52,000**	**$27.34**
2	$32	23,000	$17.43
3	$18	20,000	$16.03
4	$12	19,000	$15.53
5	$9.50	16,000	$13.97
6	$7	15,000	$13.42
7	$5	14,000	$12.85
8	$3.60	12,000	$11.65
9	$2.50	10,000	$10.38

These are the new shoving and calling ranges:

ICM Ranges MP2 Shove (Double Stack)	
MP2 (52,000)	31.5%, 22+ A2s+ A7o+ A5o-A2o K2s+ KTo+ Q8s+ Q6s-Q5s QTo+ J8s+ JTo T8s+ 65s
Calling Ranges	
MP3 (10,000)	6.9%, 88+ ATs+ AJo+
CO (23,000)	3.8%, TT+ AKs AKo
BU (16,000)	5.2%, 99+ AJs+ AQo+
SB (20,000)	4.3%, TT+ AQs+ AQo+
BB (14,000)	8.0%, 88+ ATs+ ATo+

The striking thing to notice is how much wider the chip leader can shove, 31.5% of hands compared to 23% of hands in the previous example. You'll notice that 65s is in there even though 76s and 78s are not, we have seen this before and it is the fact that this specific hand beats and blocks an A2345 straight often enough, which is significant given the calling ranges include a lot of Ax.

The curious thing here is that the calling ranges have not got tighter, they have got wider. This is because the chip leader's range has become so wide it makes a few more hands more profitable to call with. That may seem counterintuitive, why is it that when a big stack has a more commanding lead both shover and caller can play a wider range? The key is to look at the percentage increase in the ranges. The big stack has seen their range add 8.5% of total hands, the Button in this example has only added 1.4% of hands to their range. The difference between the shoving and calling increases is not a direct correlation, the big stack gets to add way more hands and the other stacks barely change their ranges.

How far can a big stack push things? Let's move things a few places and put our big stack under-the-gun and go back to the original example where they have a small lead on the table. Now they have a whole table to get through, this is the new table line up:

UTG	26,000
UTG+1	10,000
MP1	23,000
MP2	16,000
MP3	20,000
CO	14,000
BU	12,000
SB	15,000
BB	19,000

Here are the new shoving and calling ranges:

ICM Ranges UTG Shove	
UTG (26,000)	13.5%, TT+ 88-55 A2s+ AJo+ A5o KTs+ KQo QJs
Calling Ranges	
UTG+1 (10,000)	3.5%, JJ+ AQs+ AKo
MP1 (23,000)	1.7%, QQ+ AKs
MP2 (16,000)	3.0%, JJ+ AKs AKo
MP3 (20,000)	2.6%, QQ+ AKs AKo
CO (14,000)	3.2%, JJ+ AQs+ AKo
BU (12,000)	3.8%, TT+ AQs+ AKo
SB (15,000)	3.5%, JJ+ AQs+ AKo
BB (19,000)	3.0%, JJ+ AKs AKo

Now our Hero can only shove 13.5% of hands, which is very tight and not unlike the typical range most stacks would play from this position. There are some interesting inclusions and omissions in this range, 99 does not make it into the range but 88-55 does, because while all these smaller pairs are at best flipping, 55-88 make more straights which are not blocked by JJ+, but 99 does have some straights blocked by JJ-KK. No pairs below 55 but A5o is in the range because it makes a wheel. The suited Aces and broadway hands are mostly there because they block the calling ranges of the other players and make straights/flushes when they are called.

Position and blockers play a much more important role in the range here than our chip leader's stack, which we have already identified is almost as vulnerable as the other stacks. The calling ranges here are very tight and almost identical to each other, the reason why our Hero therefore cannot go wild on them is because although each player calls less than 4% of the time, it is less than 4% of the time eight times in a row. The combined chance of at least one of the players calling, and with a tight range, is closer to 20%.

Let's now look at the same situation but once again give our Hero double the stack in the last example:

ICM Ranges UTG Shove (Double Stack)	
UTG (52,000)	19.8%, 44+ A2s+ ATo+ A5o-A3o K5s+ KJo+ QTs+ JTs
Calling Ranges	
UTG+1 (10,000)	4.5%, TT+ AQs+ AQo+
MP1 (23,000)	2.1%, JJ+ AKs
MP2 (16,000)	3.3%, TT+ AKs AKo
MP3 (20,000)	3.3%, JJ+ AKs AKo
CO (14,000)	3.8%, TT+ AQs+ AKo
BU (12,000)	4.4%, TT+ AQs+ AQo+
SB (15,000)	3.8%, TT+ AQs+ AKo
BB (19,000)	3.8%, TT+ AQs+ AKo

There has been a reasonable increase in the range, instead of 13.5% of hands it is 19.8% of hands. The calling ranges have gotten a tiny bit wider to reflect this, but once again not in a direct correlation with how much wider the shover can go. This is still a relatively tight shoving range, certainly a lot tighter than some people might think a commanding chip leader can go. Once again, position is perhaps the most influential factor at play here.

Let's look again at the last two examples, but now from an ICM extreme perspective. We shall return to the example under-the-gun where we have a small chip lead, but this time it is the money bubble. We have removed the first payout to simulate that. These are the new equities:

Player	Potential Payout	Chips	Equity
1	**$49**	**26,000**	**$19.93**
2	$32	23,000	$18.50
3	$18	20,000	$16.94
4	$12	19,000	$16.39
5	$9.50	16,000	$14.63
6	$7	15,000	$14
7	$5	14,000	$13.35
8	$3.60	12,000	$11.95
9	$0	10,000	$10.41

Here are the new shoving and calling ranges:

ICM Ranges UTG Shove (Bubble)	
UTG (26,000)	17.3%, TT+ 88-55 A2s+ ATo+ A7o A5o-A3o K9s+ KQo QJs
Calling Ranges	
UTG+1 (10,000)	3.3%, JJ+ AQs+ AKo
MP1 (23,000)	1.7%, QQ+ AKs
MP2 (16,000)	3.0%, JJ+ AKs AKo
MP3 (20,000)	1.7%, QQ+ AKs
CO (14,000)	3.2%, JJ+ AKs AKo
BU (12,000)	3.8%, TT+ AQs+ AKo
SB (15,000)	3.3%, JJ+ AQs+ AKo
BB (19,000)	3.0%, JJ+ AKs AKo

If you compare this to our original under-the-gun example it is a 4.3% increase in the number of hands we can shove but the calling ranges have barely changed. The only player who changes their range is MP3 who can no longer call with AKo where they could have in the previous example.

So, a small increase in the range, but not much. What about if we are on the bubble and our leader has twice as many chips? These are the new equities:

Player	Potential Payout	Chips	Equity
1	**$49**	**52,000**	**$27.33**
2	$32	23,000	$17.31
3	$18	20,000	$15.86
4	$12	19,000	$15.34
5	$9.50	16,000	$13.70
6	$7	15,000	$13.11
7	$5	14,000	$12.50
8	$3.60	12,000	$11.19
9	$0	10,000	$9.75

Here are the new shoving and calling ranges:

ICM Ranges UTG Shove (Double Stack on Bubble)	
UTG (52,000)	29.1%, 22+ Ax K2s+ KTo+ Q8s+ QJo J9s+
Calling Ranges	
UTG+1 (10,000)	3.8%, TT+ AQs+ AKo
MP1 (23,000)	2.1%, JJ+ AKs
MP2 (16,000)	3.0%, JJ+ AKs AKo
MP3 (20,000)	2.1%, JJ+ AKs
CO (14,000)	3.8%, TT+ AQs+ AKo
BU (12,000)	3.8%, TT+ AQs+ AKo
SB (15,000)	3.8%, TT+ AQs+ AKo
BB (19,000)	3.5%, TT+ AKs AKo

Now we are starting to see the benefit of a chip lead having exponential rewards. We can now shove 29.1% of hands even though we have to get through eight other players. This time our Hero has seen their range increase dramatically but the calling ranges have barely changed. The calling ranges are almost the same as in the first under-the-gun example but because we are on the bubble and because we have twice as many chips as before, we can shove much more than twice as many hands.

If you keep increasing the stack, the same thing happens. Just for fun, let's look at what happens when we have more than ten times as big a stack as our first example:

ICM Ranges UTG Shove (Super Duper Stack on Bubble)	
UTG (300,000)	66.6%, 22+ Qx+ J2s+ J5o+ T2s+ T8o+ 95s+ 85s+ 74s+ 76o 63s+ 65o 52s+ 54o 42s+ 32s
Calling Ranges	
UTG+1 (10,000)	4.5%, 99+ AJs+ AKo
MP1 (23,000)	1.8%, JJ+
MP2 (16,000)	2.3%, TT+
MP3 (20,000)	2.3%, TT+
CO (14,000)	3.0%, 99+ AKs
BU (12,000)	4.2%, 99+ AQs+ AKo
SB (15,000)	3.3%, 99+ AQs+
BB (19,000)	2.3%, TT+

Here we can shove 66.66% of hands, we can shove 32s, and the calling ranges remain incredibly tight. They have widened a bit but only to the extent that some players can call with 99 or AJs. The bigger your stack the wider you can shove, but this shows a very important lesson, which is that there is a floor to calling ranges. Unless you are a tiny micro stack, there will be a bottom to your range you should not go below. This is an unusual example, but in practice in ICM extreme spots you should probably rarely go lower than AJs and 88 with a playable stack when you are covered.

Calling ranges

We've looked at how ICM influences a big stack's shoving range, let's do the same for their calling range. This is the new table line up, our big stack is now the Big Blind, all the other details are as per our first example in this chapter:

UTG	10,000
UTG+1	23,000
MP1	16,000
MP2	20,000
MP3	14,000
CO	12,000
BU	15,000
SB	19,000
BB	**26,000**

And here are the calling ranges for assuming each player shoves into our Big Blind after the players before them have folded:

ICM Ranges Big Blind Call	
MP2 Shove (20,000)	20.4%, 22+ A2s+ ATo+ A5o K9s+ K7s-K6s KTo+ QTs+ QJo JTs
Big Blind Call (26,000)	5.4%, 99+ AJs+ AQo+
MP3 Shove (14,000)	20.9%, 22+ A2s+ A9o+ K7s+ KTo+ Q9s+ QJo J9s+ T9s
Big Blind Call (26,000)	9.2%, 66+ ATs+ ATo+ KQs
CO Shove (12,000)	29.2%, 22+ A2s+ A7o+ A5o-A4o K5s+ KTo+ Q8s+ QTo+ J8s+ JTo T8s+ 98s 87s
Big Blind Call (26,000)	14.0%, 44+ A7s+ A8o+ KJs+ KQo
BU Shove (15,000)	38.1%, 22+ Ax K3s+ K9o+ Q5s+ Q9o+ J7s+ J9o+ T7s+ T9o 97s+ 86s+ 76s
Big Blind Call (26,000)	13.8%, 55+ A7s+ A8o+ KTs+ KQo
SB Shove (19,000)	61.1%, 22+ Ax K2s+ K3o+ Q2s+ Q8o+ J2s+ J7o+ T2s+ T7o+ 93s+ 97o+ 84s+ 86o+ 74s+ 76o 63s+ 53s+ 43s
Big Blind Call (26,000)	16.9%, 66+ A5s+ A7o+ K9s+ KTo+

If you go back to the previous chapter where we did this for the short stack, the calling ranges are similar and in fact, the short stack can call wider in a lot of spots. In that chapter the short stack was calling off the same amount, 10,000 chips for their tournament life, whereas here we are calling off a different amount each time depending on our opponent. For the most part though, these are quite standard and pretty tight calling ranges. We do not have a commanding chip lead, we can get hurt as much as anyone else at the table. So what about when we double our stack, all other details remaining the same?

ICM Ranges Big Blind Call (Double Stack)	
MP2 Shove (20,000)	16.2%, 44+ A2s+ ATo+ K9s+ KJo+ QTs+ JTs
Big Blind Call (52,000)	6.8%, 88+ AJs+ AJo+
MP3 Shove (14,000)	20.7%, 22+ A2s+ A9o+ K8s+ KTo+ Q9s+ QJo J9s+ T9s
Big Blind Call (52,000)	10.0%, 55+ A9s+ ATo+ KQs
CO Shove (12,000)	26.3%, 22+ A2s+ A7o+ A5o K8s+ KTo+ Q9s+ QTo+ J9s+ JTo T8s+ 98s
Big Blind Call (52,000)	15.9%, 33+ A4s+ A8o+ KTs+ KQo
BU Shove (15,000)	31.8%, 22+ Ax K5s+ KTo+ Q8s+ QTo+ J8s+ JTo T8s+ 97s+ 87s
Big Blind Call (52,000)	14.9%, 44+ A5s+ A8o+ KTs+ KQo
SB Shove (19,000)	43.4%, 22+ Ax K2s+ K9o+ Q4s+ Q9o+ J5s+ J9o+ T6s+ T8o+ 96s+ 98o 85s+ 75s+ 65s 54s
Big Blind Call (52,000)	17.7%, 55+ A4s+ A7o+ KTs+ KTo+ QJs

Our calling ranges have got wider, but barely. The shoving ranges have gotten a little tighter and our calling ranges a little wider, but if you played the same calling ranges as the previous example you would not be making a huge mistake. In both examples you are calling the same amount of your opponent's chip stack and your own stack does not change that much. We did a lot of simulations where we have our Hero with a ten times bigger stack and things did not significantly change. The calling ranges never got so close that they mirrored ChipEV calling ranges, but it became clear that there was a floor to calling ranges.

Calling ranges across the board should be tight in a tournament, the only exception is when you are a super short stack where you can call with a very wide range because you get tremendous odds to do so. This is an important takeaway to end the chapter on, because this may surprise a lot of people to learn that a monster chip leader still needs a tight calling range and a micro stack can sometimes get it in very wide. The bigger your stack, the more you can take liberties as the aggressor, but when it comes to calling all-ins, tight is right.

Key Takeaways

- The bigger your chip lead, the more aggressive you can be
- The more extreme the ICM, the wider a chip leader can shove
- When you don't cover the table by much, position and blockers are more important than stack size for determining your ranges
- As a broad rule you should rarely call all-ins with worse than 99 and AJs when losing would hurt you in ICM heavy situations, but probably you should be much tighter than that

Things the pros don't know

- When a chip leader widens their range, the other players can widen their calling ranges, but by nowhere the same degree
- There is a floor to calling ranges in tournaments, unless you are a micro stack you should always call all-ins very tight

Chapter 12: Average stack

We now move onto the ICM considerations when you have a stack somewhere in the middle of the pack. We did short stack first, then big stack, (rather than the obvious order of short-middle-big) because having a medium sized stack has the least extreme ICM implications, so the lessons are a little more subtle.

Before we jump in, we will quickly remind you what the shoving and calling ranges, from MP2 onwards, were for both ChipEV and ICM spots when everyone had 10 big blinds. This as you'll recall was from our short stack chapter. Here are the ChipEV ranges:

ChipEV Ranges MP2 Shove	
MP2 (10,000)	22.8%, 22+ A2s+ A8o+ K8s+ KJo+ Q9s+ QJo J8s+ T8s+ 98s 87s
Calling Ranges	
MP3 (10,000)	10.8%, 55+ A8s+ ATo+ KJs+
CO (10,000)	11.5%, 55+ A8s+ ATo+ KJs+ KQo
BU (10,000)	12.8%, 44+ A8s+ A9o+ KJs+ KQo
SB (10,000)	16.2%, 33+ A4s+ A8o+ KTs+ KQo QJs
BB (10,000)	19.8%, 22+ A2s+ A7o+ K9s+ KJo+ QTs+ JTs

Here are the same ranges for our ICM influenced final table:

ICM Ranges MP2 Shove	
MP2 (10,000)	23.7%, 22+ A2s+ A9o+ A5o K4s+ KTo+ Q9s+ QTo+ J9s+ T9s
Calling Ranges	
MP3 (10,000)	4.7%, TT+ AQ+
CO (10,000)	5.3%, 99+ AJs+ AQo+
BU (10,000)	5.3%, 99+ AJs+ AQo+
SB (10,000)	5.3%, 99+ AJs+ AQo+
BB (10,000)	7.5%, 77+ ATs+ AJo+

Let's change the stacks so the medium stacked player has 10 big blinds, but everyone else either has more or less. This is how the table lines up:

UTG	8,000
UTG+1	18,000
MP1	5,000
MP2	**10,000**
MP3	7,000
CO	17,000
BU	20,000
SB	6,000
BB	19,000

These are the equities at the start of the hand:

Player	Potential Payout	Stack	Equity
1	$49	20,000	$21.30
2	$32	19,000	$20.69
3	$18	18,000	$20.07
4	$12	17,000	$19.42
5	$9.50	10,000	$14.13
6	$7	8,000	$12.29
7	$5	7,000	$11.30
8	$3.60	6,000	$10.26
9	$2.50	5,000	$9.14

Here are the shove and call ranges if it is folded to MP2:

ICM Ranges MP2 Shove Mix of Stacks	
MP2 (10,000)	21.1%, 22+ A2s+ A9o+ K8s+ KTo+ Q9s+ QJo J9s+ T9s
Calling Ranges	
MP3 (7,000)	5.4%, 99+ AJs+ AQo+
CO (17,000)	7.0%, 88+ ATs+ AJo+
BU (20,000)	7.5%, 77+ ATs+ AJo+
SB (6,000)	9.4%, 66+ A9s+ ATo+ KQs
BB (19,000)	10.0%, 55+ A9s+ ATo+ KQs

The thing that jumps out is that MP2s shoving ranges are very similar to the shoving ranges for both ChipEV and ICM examples where everyone has ten big blinds. The calling ranges are very different to ChipEV and quite different to the ICM example where everyone has ten big blinds. They are all a bit wider in that example, in both short and big stack cases, because of their low Bubble Factor relative to the medium stack.

This is something we will see come up a lot with a medium stack, the shoving range tends to remain at a baseline range, whereas the related calling ranges tend to be based on their Bubble Factor. You will also see the medium stack shove ranges tend to be the closest to ChipEV.

Although those stacks varied, they were quite close to the average stack, let's look at an example where we have a much wider mix, some micro stacks, short stacks, medium stacks and monster stacks.

UTG	4,000
UTG+1	32,000
MP1	3,000
MP2	**10,000**
MP3	7,000
CO	40,000
BU	20,000
SB	4,000
BB	28,000

These are the equities at the start of the hand:

Player	Potential Payout	Stack	Equity
1	$49	40,000	$27.19
2	$32	32,000	$24.35
3	$18	28,000	$22.74
4	$12	20,000	$19.02
5	$9.50	10,000	$12.93
6	$7	7,000	$10.55
7	$5	4,000	$7.65
8	$3.60	4,000	$7.65
9	$2.50	3,000	$6.51

These are the shove and call ranges:

ICM Ranges MP2 ShoveWider Mix of Stacks	
MP2 (10,000)	17.7%, 44+ A2s+ ATo+ K9s+ KJo+ Q9s+ QJo J9s+ T9s
Calling Ranges	
MP3 (7,000)	3.8%, TT+ AQs+ AKo
CO (40,000)	7.5%, 77+ ATs+ AJo+
BU (20,000)	6.8%, 88+ AJs+ AJo+
SB (4,000)	10.8%, 55+ A8s+ ATo+ KQs KQo
BB (28,000)	10.8%, 55+ A8s+ ATo+ KQs KQo

This time we have gotten much tighter than the previous three examples, although still not far off a 20% baseline range. Some of the calling ranges have got tighter and others looser, which is because the stacks are so varied that Bubble Factor plays a much bigger part. We have three micro stacks here who look poised to bust out next and three big stacks who look like they will be locking up a big finish.

This is why MP2s range has got tighter, we saw this in the Bubble Factor chapter. When somebody has quite an extreme stack, short or big, it tightens up the ranges of the other players. ICM is a calculation that works out the percentage chance of each finishing position for each player, when it looks certain a player will guarantee a particular finish position because they are short (almost guaranteed to bust next) or because they are huge (almost guaranteed to win the tournament), it makes the other finishing positions more valuable to the rest of the table.

Our average stack retains a somewhat baseline range, but has to go tighter when extreme stacks are involved. These examples so far have been akin to a hyper turbo structure, we wanted to do that to start with a 10 big blind average stack. Now let's look at what happens when we make the average stack 20 big blinds and the short stacks at least 10 big blinds:

UTG	10,000
UTG+1	30,000
MP1	11,000
MP2	**20,000**
MP3	12,000
CO	40,000
BU	34,000
SB	12,000
BB	38,000

Here are the equities:

Player	Potential Payout	Stack	Equity
1	$49	40,000	$22.12
2	$32	38,000	$21.50
3	$18	34,000	$20.19
4	$12	30,000	$18.79
5	$9.50	20,000	$14.76
6	$7	12,000	$10.75
7	$5	12,000	$10.75
8	$3.60	11,000	$10.17
9	$2.50	10,000	$9.58

Here are the new shove and call ranges:

ICM Ranges MP2 ShoveWider Mix of Stacks (20k Average)	
MP2 (20,000)	12.7%, 88+ 66 A2s+ AJo+ KTs+ KQo QTs+
Calling Ranges	
MP3 (12,000)	3.3%, JJ+ AQs+ AKo
CO (40,000)	3.8%, TT+ AQs+ AKo
BU (34,000)	3.8%, TT+ AQs+ AKo
SB (11,000)	4.7%, TT+ AQs+ AQo+
BB (19,000)	5.1%, 99+ AQs+ AQo+

All these ranges are immediately tighter because the shoving ranges are 20 big blinds, and that usually is indicative of a strong range. We wouldn't normally shove our entire range with 20 big blinds, we are doing this to look at how ICM adjusts to different stack sizes. Let's jump right into another example to compare this to, which is when we have a wider mix of stack sizes, still with 20 big blinds as the average:

UTG	5,000
UTG+1	40,000
MP1	14,000
MP2	**20,000**
MP3	8,000
CO	70,000
BU	40,000
SB	5,000
BB	38,000

The new equities:

Player	Potential Payout	Stack	Equity
1	$49	70,000	$28.09
2	$32	40,000	$21.15
3	$18	40,000	$21.15
4	$12	38,000	$20.58
5	$9.50	20,000	$14.40
6	$7	14,000	$11.73
7	$5	8,000	$8.48
8	$3.60	5,000	$6.50
9	$2.50	5,000	$6.50

The new shove and call ranges:

ICM Ranges MP2 ShoveWider Mix of Stacks (20k Average)	
MP2 (20,000)	11.5%, 88+ A7s+ A5s-A2s AJo+ KTs+ KQo QJs
Calling Ranges	
MP3 (8,000)	3.3%, JJ+ AQs+ AKo
CO (70,000)	4.7%, TT+ AQs+ AQo+
BU (40,000)	4.2%, TT+ AQs+ AKo
SB (5,000)	7.3%, 88+ ATs+ AJo+
BB (19,000)	5.0%, 99+ AQs+ AQo+

Nothing has really changed of note with the calling and shoving ranges. The Small Blind calls a bit wider but they have a very small stack, the other ranges are practically the same. What we are seeing here is where the number of blinds and perhaps position is having the most impact on the ranges, rather than the pure numerical value of the stack. In both examples a 20 big blind effective push simply means strength, regardless of who is doing it.

Now let's look at what 20 big blind ranges look like from MP2 onwards when we are in a ChipEV situation, equal stacks:

MP2 Shoving Range 20 BB ChipEv	
MP2 (20,000)	14.7%, 44+ A8s+ A5s AJo+ K9s+ KJo+ Q9s+ J9s+ T9s
Calling Ranges	
MP3 (20,000)	6.0%, 88+ AJs+ AQo+
CO (20,000)	6.6%, 77+ ATs+ AQo+
BU (20,000)	7.5%, 77+ ATs+ AJo+
SB (20,000)	7.8%, 77+ ATs+ AJo+ KQs
BB (20,000)	8.3%, 66+ ATs+ AJo+ KQs

And that exact same situation but when ICM is a factor:

MP2 Shoving Range 20 BB ICM	
MP2 (20,000)	16.1%, 55+ A2s+ ATo+ A5o KTs+ KJo+ QTs+
Calling Ranges	
MP3 (20,000)	3.0%, JJ+ AKs AKo
CO (20,000)	3.0%, JJ+ AKs AKo
BU (20,000)	3.0%, JJ+ AKs AKo
SB (20,000)	3.8%, TT+ AQs+ AKo
BB (20,000)	3.8%, TT+ AQs+ AKo

In all four of these 20 big blind examples the shoving ranges are not that much different and the calling ranges are quite close too. If you played any of these four ranges in any of these spots, you would not be making too much of an error.

This is because, as mentioned, once you get to 20 big blind shoves then you are signalling a strong range no matter what. It also shows something which came up again and again in the simulations we did, and that is the medium stack tends to have a baseline shoving range that doesn't vary that much from ChipEV and doesn't change much regardless of the payout structure or the other stacks at the table. The bigger difference is the shape of the range compared to ChipEV, there are less fewer pairs in the ICM medium stack ranges.

We think the reason why the medium stack tends to have similar ranges regardless of other factors is because no matter the table line-up if you are the medium stack you tend to occupy a sweet spot where the opposing ICM forces of not wanting to bust next but having a stack that can hurt people cancel each other out. A chip leader doesn't worry about busting and can really hurt people so they can shove wider, a short stack really wants to ladder and can't really hurt people, so they shove tighter, the medium stack is a bit of both and as such, their range remains the same.

Calling ranges

Once again let's flip things around and look at this from the perspective of a medium stack facing an all-in call. This is the new table line up:

UTG	6,000
UTG+1	16,000
MP1	20,000
MP2	4,000
MP3	18,000
CO	7,000
BU	3,000
SB	15,000
BB	**10,000**

The equities at the start of the hand:

Player	Potential Payout	Stack	Equity
1	$49	20,000	$22.76
2	$32	18,000	$21.48
3	$18	16,000	$20.11
4	$12	15,000	$19.39
5	$9.50	10,000	$15.29
6	$7	7,000	$12.32
7	$5	6,000	$11.20
8	$3.60	4,000	$8.72
9	$2.50	3,000	$7.32

Here are the calling ranges for our Hero against MP2 onwards:

ICM Ranges Big Blind Call	
MP2 Shove (4,000)	23.6%, 33+ A2s+ A5o+ K8s+ KTo+ Q9s+ QJo JTs
Big Blind Call (10,000)	52.0%, 22+ Ax K2s+ K6o+ Q2s+ Q9o+ J4s+ J8o+ T6s+ T8o+ 95s+ 97o+ 84s+ 87o 74s+ 76o 64s+ 53s+ 43s
MP3 Shove (18,000)	45.3%, 22+ Ax K2s+ K6o+ Q2s+ Q9o+ J4s+ J9o+ T6s+ T9o 96s+ 98o 85s+ 75s+ 65s 54s
Big Blind Call (10,000)	10.3%, 77+ A8s+ A9o+ KQs
CO Shove (7,000)	33.9%, 22+ Ax K5s+ KTo+ Q8s+ QTo+ J7s+ JTo T7s+ T9o 97s+ 86s+ 76s
Big Blind Call (10,000)	21.7%, 33+ A2s+ A5o+ K9s+ KTo+ QTs+
BU Shove (3,000)	39.7%, 22+ Ax K2s+ K5o+ Q6s+ Q8o+ J8s+ J9o+ T8s+
Big Blind Call (10,000)	100.0%, Any two
SB Shove (15,000)	100.0%, Any two
Big Blind Call (10,000)	28.8%, 44+ A2s+ A3o+ K5s+ K8o+ Q8s+ QTo+ JTs

All our calls here are going to be wide because we can close the action as the Big Blind. However, these ranges vary wildly and the deciding factor appears to be the stack size, and thus Bubble Factor, of the player shoving. We can call the micro stack MP2 shove with more than half our hands but when the MP3 who covers us shoves we can only call with 10.3%. We cover the Cutoff but we can only call with 33.9% in this example because their stack is much closer to ours, losing would really hurt.

Stack size is the most important factor in these ranges, but we have got a lot of micro stacks here whom we can call light. Let's look at a similar spot where we have 20 big blinds and the shortest stack is at least 10 big blinds:

UTG	10,000
UTG+1	32,000
MP1	20,000
MP2	11,000
MP3	40,000
CO	13,000
BU	14,000
SB	40,000
BB	**20,000**

The equities at the start of the hand:

Player	Potential Payout	Stack	Equity
1	$49	40,000	$22.52
2	$32	40,000	$22.52
3	$18	32,000	$19.87
4	$12	20,000	$15.03
5	$9.50	20,000	$15.03
6	$7	14,000	$12.05
7	$5	13,000	$11.50
8	$3.60	11,000	$10.35
9	$2.50	10,000	$9.74

The new shove and call ranges from each seat:

ICM Ranges Big Blind Call	
MP2 Shove (11,000)	17.5%, 33+ A2s+ ATo+ K9s+ KJo+ Q9s+ J9s+ T9s
Big Blind Call (20,000)	8.9%, 66+ ATs+ ATo+
MP3 Shove (18,000)	28.5%, 22+ Ax K2s+ KTo+ Q9s+ QJo J9s+
Big Blind Call (20,000)	5.4%, 99+ AJs+ AQo+
CO Shove (13,000)	26.2%, 22+ A2s+ A8o+ A5o K7s+ KTo+ Q8s+ QTo+ J9s+ JTo T8s+ 98s
Big Blind Call (20,000)	9.8%, 66+ A8s+ ATo+ KQs
BU Shove (14,000)	34.5%, 22+ Ax K5s+ KTo+ Q6s+ QTo+ J7s+ JTo T7s+ T9o 97s+ 87s 76s
Big Blind Call (20,000)	11.7%, 55+ A7s+ A9o+ KJs+
SB Shove (40,000)	100.0%, Any two
Big Blind Call (20,000)	17.5%, 55+ A4s+ A8o+ K9s+ KTo+ QTs+

All our calling ranges are quite tight now, even when our opponents are shoving very wide. We produced some similar examples in the Short Stack and Big Stack examples and for the most part the medium stack has to call the tightest of the three in otherwise very similar spots. This is Bubble Factor on display. A short stack has a low Bubble Factor because essentially they are the next player out unless they make a move. A big stack has a low Bubble Factor because their chips are worth less to them and as such they can take risks. The medium stack stands to lose the most, equity wise, at the table. The biggest stacks going against each other have the highest single Bubble Factors at the table, but the average Bubble Factor across the table is highest for the medium stacks. The highest Bubble Factor at this table is 1.95 when the two 40k stacks go against each other, but those two stacks have an average Bubble Factor of 1.32, the medium stack of 20k however has an average Bubble Factor of 1.45.

	UTG (10k)	UTG+1 (32k)	MP1 (20k)	MP2 (11k)	MP3 (40k)	CO (13k)	BU (14k)	S (4
UTG (10k)	■	1.41	1.37	1.31	1.43	1.33	1.34	1
UTG+1 (32k)	1.13	■	1.33	1.15	1.86	1.18	1.2	1
MP1 (20k)	1.19	1.64	■	1.22	1.68	1.28	1.31	1
MP2 (11k)	1.29	1.44	1.4	■	1.46	1.35	1.36	1
MP3 (40k)	1.11	1.56	1.26	1.12	■	1.15	1.16	1
CO (13k)	1.26	1.5	1.45	1.3	1.52	■	1.41	1
BU (14k)	1.25	1.52	1.47	1.29	1.55	1.38	■	1
SB (40k)	1.11	1.56	1.26	1.12	1.95	1.15	1.16	■
BB (20k)	1.19	1.64	1.58	1.22	1.68	1.28	1.31	1

In the last section we argued that medium stack shove ranges are the closest ICM heavy situations will get to mirroring ChipEV, is that the case for calling ranges? Let's look at the last example, but in a ChipEV spot:

ChipEV Ranges Big Blind Call	
MP2 Shove (11,000)	24.4%, 22+ A2s+ A7o+ K8s+ KTo+ Q9s+ QJo J8s+ T8s+ 98s 87s
Big Blind Call (20,000)	21.4%, 22+ A2s+ A7o+ A5o K9s+ KTo+ QTs+ JTs
MP3 Shove (18,000)	16.9%, 33+ A7s+ A5s ATo+ K9s+ KJo+ Q9s+ QJo J9s+ T9s
Big Blind Call (20,000)	9.8%, 55+ A9s+ ATo+ KQs
CO Shove (13,000)	32.7%, 22+ Ax K5s+ KTo+ Q8s+ QTo+ J8s+ JTo T7s+ 97s+ 86s+ 76s
Big Blind Call (20,000)	25.5%, 22+ A2s+ A3o+ K8s+ KTo+ QTs+ QJo JTs
BU Shove (14,000)	38.6%, 22+ Ax K2s+ K9o+ Q6s+ QTo+ J7s+ J9o+ T7s+ T9o 96s+ 86s+ 75s+ 65s 54s
Big Blind Call (20,000)	29.1%, 22+ Ax K6s+ K9o+ Q9s+ QTo+ JTs
SB Shove (40,000)	55.8%, 22+ Kx+ Q2s+ Q8o+ J4s+ J8o+ T5s+ T8o+ 95s+ 98o 85s+ 87o 74s+ 76o 64s+ 53s+
Big Blind Call (20,000)	34.0%, 22+ Ax K4s+ K7o+ Q8s+ Q9o+ J9s+ JTo T9s

Quite simply, no. This confirms the claim we made earlier that a calling mistake is way more costly than a shoving mistake when ICM is a factor. We can shove much wider than we can call because we are going to make our opponent fold most of the time but we have to have a very strong hand when we call. The middle stack occupies a sweet spot where they can hurt other players and they don't want to bust, which has a stabilizing effect on their shoving ranges, which is why they can shove similar ranges to ChipEV. The medium stack arguably has the most to lose, in equity terms, by calling and losing. Practically speaking there are four players they can just wait out and a pay jump will come their way for doing so, so calling off their stack too wide is an ICM disaster.

All the examples we have given in the last three chapters have been a toy game, similar to but not exactly like the tournaments you will play. There are so many more things that can happen other than shoves or folds at tables like these. Please don't memorise these ranges or start to open shove 40 big blind stacks because it looked like we told you to. What we want you to get from these three chapters is an idea for how the size of your stack and the stacks of

the other players should either expand or contract your ranges, and why. That is whether you are shoving or open raising, 3-betting or making a postflop decision.

A short stack still has to play tight, unless they are a micro stack. The presence of a short stack at the table should generally have the effect of tightening other other players' ranges. A big stack is able to play more aggressively, but they have to have a commanding chip lead before they can play hyper aggressive. A medium stack has the closest to a ChipEV shoving range you will see in tournaments. A medium stack has to call the tightest of all, but no matter what your stack size your calling ranges should be very tight when ICM is a factor.

The above assertions are broadly true and came up again and again in the many simulations that we did, but please don't take it as gospel. We strongly recommend you use these chapters as a jumping off point to do your own sims with ICMIZER or Holdem Resources Calculator because it is fascinating to do, a great way to study on your own and there are always outliers that will surprise you when you tinker with the stacks, the payout structures and also when you give people realistic calling ranges (all our examples have been GTO).

As mentioned these toy game examples miss out a lot of things, most notably post flop play, which we will cover next.

Key Takeaways

- Medium stacks have the highest Bubble Factors and the tightest calling ranges
- These are 'toy game' examples and should be used as a jumping off point for further study

Things the pros don't know

- Medium stacks have shoving ranges close to ChipEV, with a slightly different shape

Chapter 13: Postflop

We have left postflop play till the end for a lot of reasons. First of all, it is much easier to explain the foundational concepts with preflop examples. There is no reason why what you have learned about Bubble Factor, laddering, short stack play, big stack play and everything else cannot be applied to postflop play. Inevitably, however, the more ICM is a factor the less postflop play there is in general, so it is much better to stick to preflop for the fundamentals.

Postflop play is incredibly complex by comparison to preflop play, so we didn't want to overwhelm you with extra things to think about. So much so that it is beyond the remit of this book to cover everything you need to know about ICM in postflop hands. Sorry if this sounds like a weak excuse or a desperate attempt to upsell you, but we could literally write a book on postflop ICM. So much so, in fact, that our next book project is going to be a postflop book.

We have done a lot of postflop solver work using PIOSolver and MonkerSolver, it was this that led us to realise that the topic needs another book to do it justice. Until that book is released, we still wanted to cover what the biggest takeaways and adjustments are that you need to make in postflop spots when ICM is a factor. What follows is quite a broad overview, it does not go into the depth that a future postflop book would do.

We will start by taking a hand example in a ChipEV spot and look at what PIOSolver would do, then keep all the variables the same but make it a final table where ICM is significant. If you are unfamiliar with PIOSolver it is a postflop software that shows you how to play your entire range of hands in a GTO way. Contrary to popular belief a GTO solver does not show you the 'right' way to play a hand or the best way to win the most money, it shows you how to play your entire range of hands in a balanced way so that you can't be exploited. PIOSolver shows you how to play the maximally exploitative strategy against somebody who is playing perfect poker. In practice GTO shows you how to break even against a perfect opponent. When your opponent doesn't play GTO, usually in the form of playing too

loose or too tight, you make money automatically.

Wet Flop - No ICM

In our first example ICM is not a factor. The blinds are 50/100. The Button opens and has 2,920 chips, he is called by the Big Blind who has 3,870 chips. There are 610 chips in the pot heading to the flop.

This is the Button's range:

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s
A9o	K9o	15%	J9o	T9o	99	98s	97s	96s	95s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o

This is the Big Blind's range:

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o
A3o	40%	Q3o	J3o	T3o	93o	83o	73o	63o	53o
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o

The Button has a linear opening range. The Big Blind has a very wide range because as the Big Blind they get to close the action. It is a capped range, we would expect JJ+ and AK to 3-bet for value here, but the rest of the range we flat because it is very profitable for us to do so.

Before we go any further, we have to explain a known flaw with all the ranges you will see in this chapter. We are comparing ChipEV to ICM, so we have to compare the same ranges. In reality these are not the ranges the two players would play if ICM were not a factor. These are ICM influenced ranges, you can see for example that the Button has a lot of suited broadway hands but not many small pairs or small suited connectors. Those hands probably would be in the range if this was a genuine ChipEV analysis, but in order to compare ChipEV to ICM we have to use the same ranges each time. So this is an imperfect 'toy game' example but the takeaways are consistent with what we have discovered in our postflop analysis of thousands of hands.

Back to the example and the flop comes:

9♠ 7♠ 5♦

This is a typical wet flop, a lot of wide ranges hit this flop, there is already a potential straight, there are lots of straight and flush draws, lots of combo draws and gutshots, over pairs are often good right now and there are

three possible sets.

Some people might think this board favours the Big Blind because they have more combinations of 86 for the straight. They have 16 combinations (they have the offsuit 86o too) compared to the Button's four combinations. However, because the Big Blind's range is so wide, straights make up just 2.2% of their range, compared to 1% of the Button's range. So Big Blind has four times as many possible straights but only double the chances of actually having them. In fact, Big Blind misses this flop so often that their range has 47% overall equity compared to the 53% of the Button. The Button is also stronger because they have all the overpairs. The Big Blind has what we call a 'nutted advantage' meaning they have more two pair or better hands, but the Button still has what we call a 'range advantage' meaning their overall range is much stronger.

The hand starts with the Big Blind acting first and this is what they should do:

Check (100%)

PIOSolver wants the Big Blind to check 100% of the time on this flop. This is because they do not have enough strong hands, so if they bet here they could easily be exploited. If they bet their value hands here they would not have enough strong hands in their checking range to protect them.

When checked to we gave the Button the option of several bet sizes, including 33% of pot, 66% of pot and overbets. However, the solver only liked these two options:

Bet 403 (48.12%)	Check (51.88%)

The only bet size the Button likes is 66% of pot. The Button has some strong hands so they bet quite big, this also means they can bluff more. This is a pretty even split between checking and betting on this flop because we don't have enough strong value hands to support betting 100%. You can see the breakdown of which hands check and which hands bet below (the black cells are hands which were never in the range to begin with):

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s	A4s	A3s	A2s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s	K4s	K3s	K2s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s	Q4s	Q3s	Q2s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s	J4s	J3s	J2s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s	T4s	T3s	T2s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s	94s	93s	92s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s	84s	83s	82s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s	74s	73s	72s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s	64s	63s	62s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55	54s	53s	52s
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o	44	43s	42s
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o	43o	33	32s
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o	42o	32o	22

Most hands mix checking and betting but in most cases they prefer one action to the other. A9 always bets as do the overpairs, they are vulnerable but strong hands that are probably ahead so it is best to get the money in now. Q9 and J9 prefer checking now because they are good hands but do not want to be check/raised. T9 bets half the time because it doesn't mind a check/raise as much because it has a potential backdoor straight. Weaker pairs like K7 and Q7 check back because they don't want to get check/raised either and can win at showdown unimproved (or improve to win if they are behind right now).

We bet our weakest set, 55 because we do not block one pair 7x or 9x hands. 99 checks back because it blocks so many good one pair hands we want to get value from.

86s bets here because it is a very strong hand we want to get value from and it can easily be devalued when another spade hits (and doesn't block sets, two pairs or pairs).

What does Big Blind do when the Button bets?

Raise 1,607	Raise 870	Call	Fold

| (2.9%) | | (9.18%) | | (45%) | | (42.92%) | |

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s	A4s	A3s	A2s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s	K4s	K3s	K2s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s	Q4s	Q3s	Q2s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s	J4s	J3s	J2s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s	T4s	T3s	T2s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s	94s	93s	92s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s	84s	83s	82s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s	74s	73s	72s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s	64s	63s	62s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55	54s	53s	52s
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o	44	43s	42s
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o	43o	33	32s
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o	42o	32o	22

They fold 42.92% of their range, all the bad stuff that has missed completely and doesn't really contain any draws. 44-22 are mucks and most hands with a five are thrown away some of the time except for hands like A5s, K5s and T5s because of their potential to make straights or flushes.

There is also some check/raising, mostly with a smaller bet sizing. Hands like A8 check/raise because they have the gutshot and an overcard, especially the combos that contain one or more spade. A9s and 55 are a check/raise for value. 98 and 96 are also a pure check/raise as is TT, in both cases they contain a good one pair hand that figures to be best, 98 and 96 can also make a straight easily and TT blocks a straight from getting there (it also wants to deny an overcard a chance to outdraw it). 75s for bottom two pair is a pure check/raise because it figures to be the best but is vulnerable so prefers to get the money in now.

Q6s is interesting because it is either a fold or a check/raise, it never calls. It works as a bluff because it has a gutshot but it is too weak to call. You see this a lot in GTO, your bluffing range is just below the calling range. The hand is not good enough to call but has the best equity for a bluff. Remember

when you raise, there's always a chance the opponent will fold. Adding fold equity to some hand equity that isn't quite enough to call can add up to enough to make a raise profitable. Additionally, you can hit a very strong disguised hand if you are called, and get more money on later streets.

Most of the hands that contain a 9 or 7 are calls here, including the sets. 86 is also a pure call here to protect the range, if we are going to call with weaker hands like T9o we need a nutted hand to protect the range.

We could go on in more detail but in summary, in a ChipEV situation the Big Blind does not have a big enough percentage of strong hands so they check 100% of the time to protect their entire range. The Button has some strong hands, so when they bet they bet big for value and also to allow them more bluffs. They do check back almost half the time too. When the Button does bet the Big Blind continues 56% of the time but mostly with check/calls, only 12% of the time they check/raise.

Now, let's replay the hand again, but this time ICM is a factor.

Wet Flop - ICM

All the details are the same as last time, including the stack sizes and flop. The only new ingredient is that this is a final table which looks like this. Player 2 is the Big Blind and Player 3 is the Button:

Player	Stack Size	Potential Payout	ICM Value
1	5,400	$3,233	$2,182
2	**3,870**	**$2,334**	**$1,934**
3	**2,970**	**$1,687**	**$1,744**
4	2,200	$1,221	$1,543
5	1,800	$884	$1,419
6	1,150	$641	$1,178

The ranges and therefore overall equities are the same, the only difference at all influencing the action is that the Big Blind covers the Button while ICM is a factor. With that in mind, this is what PIOSolver suggests the Big Blind does first at the start of the hand:

Bet 152 (53.58%)	Check 46.42%)

You will recall that in the non-ICM example the Big Blind checks 100% of the time, but here they lead out 53.58% of the time. Remember that the Big Blind has the range disadvantage here and their overall equity is 47% compared to 53% of the Button, but they still get to bet half the time because of the ICM pressure they can exert. This is a massive difference you will see in general, which is that the covering player can be more aggressive. This is how the range is split:

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s	A4s	A3s	A2s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s	K4s	K3s	K2s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s	Q4s	Q3s	Q2s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s	J4s	J3s	J2s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s	T4s	T3s	T2s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s	94s	93s	92s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s	84s	83s	82s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s	74s	73s	72s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s	64s	63s	62s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55	54s	53s	52s
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o	44	43s	42s
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o	43o	33	32s
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o	42o	32o	22

Most of the hands the Big Blind leads are strong hands - they are straights, two pair, top pair and sets. There are also bluffs, mostly bluffs that have some sort of straight draw or backdoor draw. You will also notice that when the Big Blind bets this flop, it is a much smaller sizing than in the previous example when the Button bet. They are betting 152 compared to 403.

Some players might arrive at the conclusion that they can bet more here because ICM pressure can force more folds, and they can bet smaller here because they can 'get away' with risking less to win the pot. That is actually not the case. Look at the betting range, it is mostly hands that are good and want action, or draws that don't mind a call. To understand the reason for this bet, let's look at the Button's response to the bet:

Raise 454 (2.49%)	Call (86.68%)	Fold (10.84%)

The Big Blind hardly ever gets raised when they lead out on the flop and most of the time, 86.68% of the time in fact, they get called. The Button only folds 10.84% of the time. This is not a bet designed to get the opponent to fold because of the ICM pressure. It is designed to get some money in the pot

and realise equity by getting to see the turn. The Big Blind does not want the Button to check behind and is expecting them to play timidly on most streets because of ICM. If they have a value hand and want to win a big pot they need to be the aggressor; that has to be balanced with semi bluffs.

The sizing is small and would be bigger if the Big Blind covered the Button by more. It may sound counterintuitive given they are trying to build a pot, but this is for pot control. The Button can still hurt the Big Blind significantly so they don't want to put in a larger bet now, which could lead to the threat of an all-in bet on the turn and river. Betting smaller here also works as a freeze bet, much better for the Button to call 152 here than check and have them bet 400. There are two opposing forces at play here, the desire to build a pot and the desire to avoid playing for stacks. Given that the Button almost never raises the correct strategy is therefore to lead out with a small bet.

Now let's look instead at what happens when the Big Blind checks at the start of the hand. What does the Button do?

Bet 104 (61.68%)	Check (38.32%)

Two things stand out immediately. First of all, the Button is betting much more often than in the non-ICM example. They bet 61.68% of the time here compared to 48.12% of the time. This is for two reasons. First of all, the Big Blind's checking range is weaker than in the first example. They had to check 100% of the time previously but this time only check 46.42% of the time. The Big Blind has bet more strong hands, so when they check the Button can bet more frequently in response. Although the Button is covered, they are not covered by much and as such can exert ICM pressure on the Big Blind. If the Big Blind had a much bigger stack you would see the Button check back more (but the Big Blind would have led out more in the first place). There is an important general takeaway here: when you expect your opponent to play aggressively either because they are naturally maniacal or because it's correct to do so due to ICM, don't fall into the trap of being afraid to bet when checked to. Go ahead and bet your strong hands. A very common mistake players make against maniacs is they play too passively when the maniac

play passively, allowing them to realise equity for free with weaker parts of their range.

The other notable thing here is the bet sizing, which once again is very small. The Button bets 104 (basically the absolute minimum 1 big blind) here compared to 403 in the non-ICM example. This is for similar reasons to why the Big Blind leads for 152, to build a pot while keeping it under control.

The hands that bet here are similar to the ones that bet in the first example:

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s	A4s	A3s	A2s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s	K4s	K3s	K2s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s	Q4s	Q3s	Q2s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s	J4s	J3s	J2s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s	T4s	T3s	T2s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s	94s	93s	92s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s	84s	83s	82s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s	74s	73s	72s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s	64s	63s	62s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55	54s	53s	52s
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o	44	43s	42s
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o	43o	33	32s
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o	42o	32o	22

Now let's look at what happens when the Button does bet, what does the Big Blind do?

Raise 374	Call	Fold
(18.26%)	(59.09%)	(22.65%)

The big difference here is that the Big Blind check/raises a lot more. They check/raise 18.26% of the time compared to 12.08% of the time. They also

fold much less, just 22.65% of the time compared to 42.92% of the time.

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s	A4s	A3s	A2s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s	K4s	K3s	K2s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s	Q4s	Q3s	Q2s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s	J4s	J3s	J2s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s	T4s	T3s	T2s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s	94s	93s	92s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s	84s	83s	82s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s	74s	73s	72s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s	64s	63s	62s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55	54s	53s	52s
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o	44	43s	42s
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o	43o	33	32s
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o	42o	32o	22

The Big Blind gets to check/raise much more as the covering player and doesn't have to fold anywhere near as much. They can check/raise more in part because the Button has bet much smaller. Here the Big Blind check/raises their nutted set and straight hands, but also lots of gutshots and combo draws.

When the Big Blind does check/raise, this is how the Button responds:

Call (75%)	Fold (25%)

The Button has to essentially slam the brakes on and calls all their continuing range.

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s	A4s	A3s	A2s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s	K4s	K3s	K2s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s	Q4s	Q3s	Q2s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s	J4s	J3s	J2s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s	T4s	T3s	T2s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s	94s	93s	92s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s	84s	83s	82s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s	74s	73s	72s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s	64s	63s	62s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55	54s	53s	52s
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o	44	43s	42s
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o	43o	33	32s
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o	42o	32o	22

Notice that they still do not fold much, just 25% of the time. Again, most people would assume we can check/raise more here to force folds because of ICM pressure, that is not the case. It's another example of how the Big Blind knows the stacks are not going in the middle because of ICM pressure, and as such it is a tactic to build the pot. If the bet sizes had been bigger then they would be more cautious because of the ICM pressure they are also under, but because the betting is small they can build a pot safe in the knowledge they can also control it.

In this example we have simply looked at the flop strategy of Big Blind and Button and nothing else. The only difference between the two examples was ICM pressure and the fact the Big Blind covered the Button, yet the strategy changes significantly. We have already observed several broad principles you see time and time again when solving postflop hands.

The first is that the covering player can bet more frequently and the covered player has to check and call more. Because the covered player has to play more timidly, the covering player has to bet more to get more money into the pot. It is not simply a case of ICM means you can bet more to get folds, it is much more of a necessity to build a pot the covered player wants to get away from as cheaply as possible. ICM turns a covered player into a

passive calling station, so you have to do the betting for them.

This is true even when the covered player has range and/or positional advantage. In our example the Button had the stronger range and the luxury of acting last on every street. It would be a terrible strategy for the Big Blind to lead out into them if ICM was not a factor, but when ICM is significant it relegates range advantage and position to second tier considerations.

The other major difference is that the bet sizes go down in general when ICM is a factor. In a non-ICM example a strong player can exploit small bets by raising and check/raising them. They cannot do that anywhere near as often near a bubble or on a final table because the risk of elimination influences the action so significantly. We will see in the next example that not only do sizings go down, but hands that would bet larger normally become small bets, hands that would bet small normally become checks or calls, and hands that would normally call become folds. I call this phenomenon 'Downward Drift' but Barry insisted I mention his term for it which was 'Trickle Down ICM-nomics'.

Dry Flop - No ICM

We have looked at a typical wet flop, now let's look at a dry flop which is much harder to hit. All other details are the same and we start with a non-ICM example. The blinds are 50/100. The Button opens and has 2,920 chips, he is called by the Big Blind who has 3,870 chips. There are 610 chips in the pot heading to the flop.

This is the Button's range, same as before:

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s
A9o	K9o	15%	J9o	T9o	99	98s	97s	96s	95s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o

And this is the Big Blind's range:

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o
A3o	40%	Q3o	J3o	T3o	93o	83o	73o	63o	53o
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o

The difference is we now have a dry flop of:

A♣ 6♦ 5♠

This is a very good flop for the Button. They have all the Ax hands while the Big Blind is missing AA and AK. The Button has all the sets and two of the three possible two pairs. The Button has a much bigger percentage of Ax or better hands as part of their overall range, and as such has 59.01% equity overall compared to the 40.99% of the Big Blind. The Big Blind has some strong hands too, but so many misses. The Big Blind flops top pair or better 16.9% of the time, the Button flops top pair or better 31.9% of the time.

No surprises then that the Big Blind's strategy here is to check 100% of the time:

Check (100%)

And the Button responds by betting 100% of the time

Bet 152 (100%)

This is a classic example of the power of range advantage. The Big Blind does not have enough strong hands to ever lead, so has to check to protect the

strong hands it does have. The Button has such a big range advantage that they can profitably bet all their hands, even their very weak hands, because the Big Blind has so many weak hands they won't be able to continue with. The solver goes for a ¼ pot bet sizing because the Big Blind's weak hands are never calling and their strong hands are never folding. This allows them to get away cheaply the few times the Big Blind has a hand. If the Big Blind had more medium strength hands the Button would bet bigger to put pressure on them.

The Big Blind responds like this:

Raise 454 (15.25%)	Call (44.86%)	Fold (39.89%)

They have to fold almost 40% of the time and call almost 45% of the time. They do have some check/raises. This is how each hand plays:

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s	A4s	A3s	A2s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s	K4s	K3s	K2s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s	Q4s	Q3s	Q2s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s	J4s	J3s	J2s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s	T4s	T3s	T2s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s	94s	93s	92s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s	84s	83s	82s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s	74s	73s	72s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s	64s	63s	62s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55	54s	53s	52s
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o	44	43s	42s
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o	43o	33	32s
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o	42o	32o	22

The strongest Ax hands and sets are check/raised for value. There are also a lot of semi bluff type hands like 84s and 98 that get check/raised because they can hit turns where they can bluff profitably with the possibility of

making a strong hand on the river. 54o is occasionally a check/raise because it can runner runner a straight or a house, but a hand like Q5s is just a call.

When check/raised the Button responds like this:

Raise 955 (6.68%)	Call (63.55%)	Fold (29.77%)

And this is the split of hands:

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s	A4s	A3s	A2s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s	K4s	K3s	K2s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s	Q4s	Q3s	Q2s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s	J4s	J3s	J2s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s	T4s	T3s	T2s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s	94s	93s	92s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s	84s	83s	82s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s	74s	73s	72s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s	64s	63s	62s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55	54s	53s	52s
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o	44	43s	42s
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o	43o	33	32s
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o	42o	32o	22

Dry Flop - ICM

Let's look at the exact same scenario but ICM is a factor. A reminder that the Big Blind covers the Button and this is a final table. Player 2 is the Big Blind and Player 3 is the Button:

Player	Stack Size	Potential Payout	ICM Value
1	5,400	$3,233	$2,181
2	**3,870**	**$2,334**	**$1,934**
3	**2,970**	**$1,687**	**$1,744**
4	2,200	$1,221	$1,543
5	1,800	$884	$1,419
6	1,150	$641	$1,177

Once again, the Big Blind checks 100% of their range. In this instance they have such a significant range disadvantage that the ICM does not change their strategy at this point:

Check (100%)

And the Button responds by betting 100% of the time

Bet 104 (100%)

With such a range advantage the Button still bets all the time, but notice the bet sizing is much smaller. It was 152, which is a quarter pot, but now it is 104 which is essentially a min bet.

The Big Blind responds like this:

Raise 374 (13.65%)	Call (56.48%)	Fold (29.87%)

With these hands:

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s	A4s	A3s	A2s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s	K4s	K3s	K2s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s	Q4s	Q3s	Q2s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s	J4s	J3s	J2s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s	T4s	T3s	T2s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s	94s	93s	92s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s	84s	83s	82s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s	74s	73s	72s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s	64s	63s	62s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55	54s	53s	52s
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o	44	43s	42s
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o	43o	33	32s
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o	42o	32o	22

The first thing to note is that the Big Blind actually folds less in this example, 29.87% of the time compared to 39.89% in the no ICM example. This is a function of the smaller bet from the Button, like we saw in the wet flop example the smaller bet is not designed to get away with a cheap bluff because of ICM, it is to guarantee more calls because a bigger bet would be too much for the Big Blind to take, even though they are the covering player. The Big Blind therefore calls 56.48% of the time here instead of 44.86% of the time in the no-ICM example.

The Big Blind check/raises a little bit less and does so at a smaller size, which is relative to the smaller continuation bet from the Button. The really interesting thing to note here is how the check/raising range changes. The Big Blind no longer check/raises with their strongest Ax hands but does so with more bluffs that can make strong hands by the river. 94s with a backdoor flush draw, for example, becomes a check/raise here but is not in the no ICM version. This is a hand that can make a flush and also a 3, 2 or 7 gives it a straight draw it can double-barrel bluff on the turn. 94s has a lot more robust equity here than it at first seems.

ICM has led the solver to bluff more of these types of hands because it can get more folds as a result. This is despite the fact that the bet size is

smaller, which usually should weight a range more towards value. The Button's response here is to fold 29.77% of the time and call 63.55% of the time. In the no-ICM example it folds 29.34% of the time and calls 67.97% of the time. On the face of it, it doesn't look like ICM has changed a thing, but let's look at a turn card.

When the turn comes 8♥ and the Big Blind fires a second bet, which he will 89.59% of the time and mostly with a 815 sizing, this is how the Button responds in the ICM example:

Raise 2,956 (20.35%)	Call (34.40%)	Fold (45.25%)

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s	A4s	A3s	A2s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s	K4s	K3s	K2s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s	Q4s	Q3s	Q2s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s	J4s	J3s	J2s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s	T4s	T3s	T2s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s	94s	93s	92s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s	84s	83s	82s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s	74s	73s	72s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s	64s	63s	62s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55	54s	53s	52s
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o	44	43s	42s
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o	43o	33	32s
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o	42o	32o	22

Now the Button has to fold 45.25% of the time and if they do bet, they have to go all-in 20.35% of the time. The 8♥ makes for a lot of profitable bluffs with the hands the Big Blind check/raised. The Button, who started with a massive range advantage, now has to fold AK and AQ some of the time (It will continue with AK and AQ that has the King or Queen of hearts because those two hands do not block a hand that might have been bluffing

with a backdoor flush draw).

If this were the no-ICM example in an otherwise similar situation, this is how the Button responds to a double barrel on an 8♥ turn. Note that the solver would have made them bet more on the previous streets which is why the all-in raise is smaller:

Raise 2,516 (20.22%)	Call (43.08%)	Fold (36.7%)

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s	A4s	A3s	A2s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s	K4s	K3s	K2s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s	Q4s	Q3s	Q2s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s	J4s	J3s	J2s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s	T4s	T3s	T2s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s	94s	93s	92s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s	84s	83s	82s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s	74s	73s	72s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s	64s	63s	62s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55	54s	53s	52s
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o	44	43s	42s
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o	43o	33	32s
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o	42o	32o	22

Considerably fewer folds and in this example AKs is happily reshoving and AQ is calling. The ranges and equities are the same, but with no-ICM AK goes all-in and with ICM most combinations of AK are a fold. This is a good example of what I call a Threat Bet.

A Threat Bet is a small bet on the flop followed up by a larger bet on the turn threatening a river all-in if called. It is particularly powerful when ICM is a factor. As we have seen, we bet small with ICM because it's the only way some hands will put money into the pot. However, once the pot starts building a bigger bet on the turn suddenly becomes very threatening and thus will get more folds.

This is why robust hands like 94s can be played more aggressively than a medium strength hand like TT. 94s will make very strong hands by the river but if you get TT to the river you are often going to have to fold it if your opponent bets. You see this in deep cash games too, the solvers like hands that can make monsters by the river. Even though in ICM spots you are often very shallow the fact that you need a very strong hand to call off with is very similar to deep cash games.

Big Stack vs Small Stack - No ICM

The last two examples we saw two bigger stacks facing off against each other. The ICM pressure was significant on both of them in part because they had similar stack sizes. Now let's look at what happens when there is a big difference between the stack sizes. In this example we will see the chip leader who has three times as many chips as the second shortest stack.

The blinds are 50/100. The Button opens and has 1,800 chips, he is called by the Big Blind who has 5,400 chips. There are 610 chips in the pot heading to the flop

This is the Big Blind's range:

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s
A7o	K7o	Q7o	J7o	T7o	97o	30%	77	76s	75s
20%	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	70%	55
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	80%
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o

This is the Button's range:

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5
80%	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5
ATo	KTo	30%	20%	TT	T9s	30%	T7s	T6s	T5
A9o	50%	Q9o	J9o	T9o	99	20%	97s	96s	95
30%	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75
50%	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	70%	55
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52

Before we go any further, notice how different and strange both ranges look compared to the previous ranges. Both are polarised ranges with a lot of big hands missing and a lot of strange hands included. This is simply because even though the Big Blind has 54 big blinds, both players are playing 18 big blinds effective stacks. That is a short enough stack depth that a lot of hands would prefer to go all-in preflop. The Button is missing a lot of Ax, Broadway and smaller pairs because it would be more profitable to open shove. They open some of the strongest hands to 'induce' with them and also some of their weakest hands to balance the inducing range. The Big Blind flats much more because they close the action, but the range is also missing lots of Ax, big pairs and suited Kings because they would 3-bet all-in preflop.

We are going to use the wet flop from our first example:

9♠ 7♠ 5♦

The Big Blind has a lot of medium strength hands and quite a few 'nutted' hands. They have all the sets, the straight and lots of combo draw type hands. They are missing overpairs. Overall their equity is 44.1% on this flop. The Button doesn't have any nutted hands but does have all the overpairs and much fewer misses as a percentage of their overall range. So they have range advantage still and with a stack-to-pot ratio of just three will

be happy to stack off with their overpairs.

Because the Big Blind has so many misses, their strategy is to check 100% of the time:

Check (100%)

The Button responds with a mixed strategy:

Bet 285 (53.38%)	Check (46.62%)

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s	A4s	A3s	A2s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s	K4s	K3s	K2s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s	Q4s	Q3s	Q2s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s	J4s	J3s	J2s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s	T4s	T3s	T2s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s	94s	93s	92s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s	84s	83s	82s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s	74s	73s	72s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s	64s	63s	62s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55	54s	53s	52s
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o	44	43s	42s
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o	43o	33	32s
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o	42o	32o	22

A9s and K9o like to bet to get value from worse 9x, as do most of the overpairs, but AA checks to protect the checking range because it is the least vulnerable. T9s and all the 7s and 5s check back. The bet is half pot because Big Blind has a lot of medium strength hands that might call.

When the Button bets, the Big Blind responds like this:

Raise 661 (21.60%)	Call (38.56%)	Fold (39.84%)

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s	A4s	A3s	A2s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s	K4s	K3s	K2s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s	Q4s	Q3s	Q2s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s	J4s	J3s	J2s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s	T4s	T3s	T2s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s	94s	93s	92s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s	84s	83s	82s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s	74s	73s	72s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s	64s	63s	62s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55	54s	53s	52s
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o	44	43s	42s
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o	43o	33	32s
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o	42o	32o	22

The Big Blind folds some gutshots and weak bottom/under pairs. The effective stacks are small so these hands are not worth speculating with. They raise their strongest 9x hands, combo draw hands, TT and JJ.

Big Stack vs Small Stack - ICM

That is all quite straightforward. Now, let's play the hand again but this time at the same final table as our previous examples. Player 1 is the Big Blind and Player 5 is the Button.

These are the payouts, stack sizes and ICM values before the hand began:

Player	Stack Size	Potential Payout	ICM Value
1	**5,400**	**$3,233**	**$2,155.66**
2	4,200	$2,334	$1,968.73
3	3,200	$1,687	$1,772.56
4	2,200	$1,221	$1,521.47
5	**1,800**	**$884**	**$1,399.17**
6	1,200	$641	$1,182.42

Last time the Big Blind checked 100% of the time because they were at a range disadvantage, this time they act like this:

Bet 1,560 (5.06%)	Bet 103 (5.58%)	Check (89.35%)

They still check 89.35% of the time but this time the ICM pressure allows them to lead some of the time. No specific hand gets led a lot, it is more of a split, but it is mostly things like gutshots with flush draws or pairs with backdoor straight draws.

The more interesting thing to note is the bet sizes when the Big Blind does lead. Half the time they are putting the Button all-in and half the time they are betting the minimum. There is no bet sizing in between, it is either min or all-in.

When they put the Button all-in, this is how they respond:

Call (36.71%)	Fold (63.29%)

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s	A4s	A3s	A2s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s	K4s	K3s	K2s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s	Q4s	Q3s	Q2s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s	J4s	J3s	J2s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s	T4s	T3s	T2s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s	94s	93s	92s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s	84s	83s	82s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s	74s	73s	72s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s	64s	63s	62s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55	54s	53s	52s
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o	44	43s	42s
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o	43o	33	32s
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o	42o	32o	22

They have to do a lot of folding and can only really continue with their overpairs and A9s. Even the 5x and 7x have to fold unless they have some sort of draw to go with them.

When the Big Blind leads for 103, this is the Button's response:

Raise 1,560 (27.51%)	Call (59.96%)	Fold (12.53%)

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s	A4s	A3s	A2s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s	K4s	K3s	K2s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s	Q4s	Q3s	Q2s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s	J4s	J3s	J2s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s	T4s	T3s	T2s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s	94s	93s	92s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s	84s	83s	82s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s	74s	73s	72s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s	64s	63s	62s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55	54s	53s	52s
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o	44	43s	42s
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o	43o	33	32s
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o	42o	32o	22

The small bet does not get many folds, but as we have seen before the small bet is designed to build a pot when the opponent would otherwise check back. The Button mostly calls here but when they do raise, the only thing they do is shove. The most common shoves are TT-QQ which are for value but also because they are the most vulnerable to an over card. KTo with a spade is also a shove because it has robust equity. A7o is included as a bluff because it has outs against calling range hands like JJ.

A hand like TT has 67% equity against the Big Blind's range. Normally that would be a strong enough hand to 'induce' with and shoving would be a waste because it folds out weaker hands. However, with ICM, folding out weaker hands is a good result because you can't bust the tournament. This is Bubble Factor at play here, it's precisely why we shove hands preflop when we are shallow. Inducing when you are shallow is a disaster with ICM because it forces you to call an all-in and potentially bust, or fold your hand, neither of which is good.

When there is a big difference between stack sizes with ICM influencing the action, you will see this min or all-in approach. You will usually see the least aggressive and most aggressive option and nothing in the middle. You want to be passive but if you are going to be aggressive, take the most aggressive line possible. Paradoxically both options are low variance - the min bet because it keeps the pot small and the shove because you can expect so many folds. Betting a medium amount then facing a really tough decision

when you get raised is the worst option.

The most common line from the Big Blind was still to check in this spot, so what happens when they do that?

Bet 1,560 (30.23%)	Check (69.77%)

AA	AKs	AQs	AJs	ATs	A9s	A8s	A7s	A6s	A5s	A4s	A3s	A2s
AKo	KK	KQs	KJs	KTs	K9s	K8s	K7s	K6s	K5s	K4s	K3s	K2s
AQo	KQo	QQ	QJs	QTs	Q9s	Q8s	Q7s	Q6s	Q5s	Q4s	Q3s	Q2s
AJo	KJo	QJo	JJ	JTs	J9s	J8s	J7s	J6s	J5s	J4s	J3s	J2s
ATo	KTo	QTo	JTo	TT	T9s	T8s	T7s	T6s	T5s	T4s	T3s	T2s
A9o	K9o	Q9o	J9o	T9o	99	98s	97s	96s	95s	94s	93s	92s
A8o	K8o	Q8o	J8o	T8o	98o	88	87s	86s	85s	84s	83s	82s
A7o	K7o	Q7o	J7o	T7o	97o	87o	77	76s	75s	74s	73s	72s
A6o	K6o	Q6o	J6o	T6o	96o	86o	76o	66	65s	64s	63s	62s
A5o	K5o	Q5o	J5o	T5o	95o	85o	75o	65o	55	54s	53s	52s
A4o	K4o	Q4o	J4o	T4o	94o	84o	74o	64o	54o	44	43s	42s
A3o	K3o	Q3o	J3o	T3o	93o	83o	73o	63o	53o	43o	33	32s
A2o	K2o	Q2o	J2o	T2o	92o	82o	72o	62o	52o	42o	32o	22

The most common line is to check back, even though the Button has range advantage. This is to control the pot and try to get to showdown. They are the player at risk so they don't want to build the pot.

Once again, look at the bet size when the Button does bet. 30.23% of the time they shove on the flop when checked to. In fact it's almost identical to the shove range they had when they faced a min bet.

Essentially, what has happened here is the Button has decided to go with their hand on this flop and shove regardless of whether they are lead into or checked into. Again, it would be a disaster to make a small bet, get shoved on here and potentially have to fold the hand. It is also an unpleasant sweat to make a small bet and call a reshove with a very strong hand when you risk elimination. Much better to get the hand over with and put the pressure on your opponent instead.

We have covered three very simple examples and we have barely got past the turn in any of them. If you are unfamiliar with GTO solvers like PIOSolver this might already be a lot of information to take in. As mentioned, as we draw this book to a close, our next title is going to be a much more detailed postflop book if that is what you are looking for.

However, these three examples highlight some of the biggest strategic differences between postflop ICM hands vs non-ICM hands. Most of all they highlight how range advantage and position are not as important as who covers who in postflop spots. A lot of the strategies are counter intuitive and in some cases baffling, especially if this is your first foray into GTO postflop strategy.

We have left this section until the end for good reason, we think you can learn most of the fundamental ICM lessons using preflop poker as the foundation. Then, when you have these fundamentals mastered you will be able to apply them to postflop spots. Also as most end game scenarios ultimately are shallow anyway, your preflop skills are most important.

Key Takeaways

- Who covers whom is often more important than who has range advantage or position, when ICM is a factor
- The covering player can be more aggressive postflop, the covered player has to play more passive
- Hands tend to 'drift downward' in their action when ICM is a factor - big bets become small bets, small bets become checks, raises become calls, calls become folds
- Bet sizings tend to go down in general with ICM
- ICM likes to bluff hands with draws, including gutshots and runner-runner draws, because they can get a lot of folds on the turn and make a big hand on the river

Things the pros don't know

- We bet small out of position to build the pot in a controlled way

when it would otherwise be checked back, rather than to get folds cheaply
- When stacks are shallow often the best choice is 'min or all-in' ie. taking the least aggressive or most aggressive option, rather than inducing bets

Studying away from the tables

Like everything you learn in poker, we hope you use this book as a jumping off point for further study away from the tables. ICM is one of those things you want to keep sharp rather than studying it once and assuming you know it all.

To begin with, we think you should do some extra work on Bubble Factor and the equities of players at final tables. You can do this easily for free at www.icmpoker.com. Just look at spots you played and work out the Bubble Factors between the players and also get in the habit of guessing what the equity of each player was at the start of the hand. Do this for a little while and you will develop a sixth sense for how much your stack is worth, what a good deal would look like, which players you should avoid and which ones you should target for aggression.

If you are going to take ICM study seriously then you are going to have to review hands using an ICM calculator. At the time of writing the two best offerings on the market are ICMIZER and we personally recommend Holdem Resources Calculator.

One broad piece of advice we can give about using ICM calculators which will not date, and it was the method we used to write this book, would be to study your ranges using these tools in standard ChipEV spots and then comparing them to the ICM equivalent. This will help you improve both your ICM game and at the same time your overall MTT game, as you will be studying your baseline ranges by default. It might really help to visually look at the shape of each range and how they differ, rather than merely listing out the hands.

Most importantly, work on your calling ranges first. As we have seen, the most costly errors are the ones where you make a bad call for your tournament life. Master when to call an all-in on the bubble or final table and you will see the biggest single improvement in your ICM win rate.

Every single hand example we have used in this book has been Game

Theory Optimal and assumes our opponents are also playing GTO. This was because we felt that was the best way to learn the foundational concepts. Your self study should also use GTO as the starting point but also adjust for when opponents do not play perfectly. You can give opponents wider or tighter than GTO ranges in solvers to best learn how to play against nits and maniacs in real life.

We studied post flop spots using PIOSolver and MonkerSolver which are both excellent, however they are not easy for the novice player to start using.

We do, however, strongly recommend the DTO poker app both generally for post flop play and also because they have developed an option for ICM spots. It is a post flop trainer that simulates post flop spots, tests if you can make the GTO approved decision then gives you feedback afterwards. It's much easier and fun to use than a GTO solver and most importantly for people new to this it doesn't require the significant computing power they do. If you are interested in DTO you can get 20% off by visiting www.dto.poker and using the coupon code **CHIPRACE**.

As we have hinted throughout these pages, we felt that post flop ICM was a topic beyond the scope of this book and that it deserves a dedicated book of its own. Our likely next two book projects will cover GTO and final table play, and we expect to cover post flop ICM spots in both of them. We will also be releasing free content on that topic in my newsletter, which you can subscribe to by visiting the link below:

tinyurl.com/GTOPoker

One of the great joys of writing these books has been the feedback we have got from readers and that includes answering questions where we can. Feel free to find me on Twitter @daraokearney if you have a difficult hand you wanted to get a second opinion on. And if you want a good laugh, you could ask Barry @barry_carter.

Acknowledgements

The Authors

Dara O'Kearney

Dara O'Kearney is a professional poker player from Ireland with a long standing reputation as the best satellite specialist in the game. He is sponsored by Unibet Poker and is the co-host of The Chip Race Podcast. He is also an ambassador for CardsChat.com. He has previously released Poker Satellite Strategy & PKO Poker Strategy with co-author Barry Carter.

www.twitter.com/daraokearney
www.dokearney.blogspot.com

Barry Carter

Barry Carter is a poker author from the United Kingdom with a long standing reputation as a mediocre player. He is the editor of PokerStrategy.com, the world's largest poker community, and co-author of the best-selling books The Mental Game of Poker 1 & 2, Poker Satellite Strategy & PKO Poker Strategy.

www.twitter.com/barry_carter
www.pokermediapro.com

Other books by the authors

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