



PRACTICE QUESTIONS
TO HELP YOU MASTER
THE PART II FRM[®] EXAM

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Top questions you must master to pass the Part II FRM[®] Exam

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But first, here are some questions to test your knowledge of typical, fundamental topics that are likely to appear on the actual exam.

1. *You are leading a discussion with bank interns on the financial crisis. You go over the issues associated with liquidity and repo failure in a crisis of confidence. One intern asks if the crisis was driven by bank failure or bank insolvency. What is the difference between the two?*

- A. *Insolvency is a bank's inability to pay its employees and is forced into receivership, whereas a bank failure is an event where depositors lose a significant amount of cash on hand.*
- B. *Insolvency is when a central bank or lender of last resort steps in to bail out an institution. A bank failure is the event where there is no lender of last resort.*
- C. *Bank insolvency is just like any insolvency when liabilities exceed assets. A bank failure is the collapse of the bank with significant loss to depositors and creditors.*
- D. *Insolvency is the event that triggers Securities Investor Protection Corporation (SIPC) protection of depositor balances, and a failure is when that depositor insurance is insufficient to cover all depositors.*

Answer: C

Bank failure is extremely rare in the modern world. This is a Lehman-type event: It could be argued that Lehman was insolvent long before failure but continued to do business because it could continue to raise capital in the repo or short-term funding markets. Insolvency is just like any other insolvency; a failure is when a bank collapses and not even a central bank can bail them out.

2. *A junior analyst is reviewing credit decision rules and you want to spot-check their understanding of the relative impacts of bad credit decisions. You describe a scenario where there are only two states of the world, good firms and bad firms, and the firm is classified either correctly or not, leading to four potential states of the world. What type of decision rule does this describe?*

- A. *Minimax decision rule*
- B. *Neyman-Pearson rule*

C. *Baysian decision tree*

D. *Reject-rate rule*

Answer: B

The Neyman-Pearson focuses on the impact of type I and type II errors and that means a good company classified either correctly or not and vice versa for bad companies. In this case, a type I error is damaging to the bank because a loan is actually extended to a defaulting bad firm, whereas a type II error would mean that credit was not extended to a nondefaulting bad firm (missed opportunity but not a credit loss).

The other choices are all real decision types we will get to later in the notes and other practice questions.

3. *During a review of the credit book, you want to do a spot check of the loss given default (LGD) assumptions and calculations associated with credit default swaps. Of the following, which is the correct definition of LGD?*

- A. *Loss given default is the difference between recovery and exposure.*
- B. *The LGD is known in advance because it is a function of exposure to the defaulting party but the probability of default is not known with certainty.*
- C. *LGD is the probability of default divided by the expected loss.*
- D. *LGD is the exposure minus recovery.*

Answer: D

There are lots of ways to express LGD and only the last answer choice does it correctly. The first choice is wrong because it is reversed: LGD is the difference between exposure and recovery, not the other way around. For the second answer choice, LGD is not known with certainty beforehand. There is a lot of research that guides what can be expected to be recovered from different credit ratings that default but we can't know with certainty. The third answer choice is wrong because it is flipped: LGD is the expected loss divided by the probability of default, leaving the last answer as the only correct choice.

4. *In a meeting with a client for an ISDA negotiation, you ask how the client calculates credit VaR. The client replies that they approximate credit VaR by making assumptions about the variance of expected losses.*

Which of the following statements is correct with respect to credit VaR and its relationship to expected losses?

- A. *Credit value at risk is expected losses plus unexpected losses.*
- B. *Expected losses will always be greater than credit VaR.*
- C. *Unexpected losses are the difference between a bond's par value and its expected future value.*
- D. *Credit VaR is the worst-case loss over some threshold minus the expected losses.*

Answer: D

Always think of value at risk in terms of being over some threshold. Also know that expected losses are those that can be reasonably expected and unexpected losses are those that occur after that. The third answer choice reverses this relationship. The first choice reverses the correct answer, and credit VaR will always be much greater than expected losses.

5. *Dispersions of returns is a key driver of return divergence across multiple accounts managed by the same manager and, in theory, all managed in the same way. Which of the following statements best describes the relationship between the causes of divergence and portfolio returns?*
- A. *If the estimated alphas, risk factors, and transaction costs stay constant over time, then any dispersion of returns will converge over time as cash flows come in and out of the fund.*
 - B. *Dispersion of returns can be caused by separate accounts whose betas and risk factor exposures diverge over time simply due to the inattention of the fund manager.*
 - C. *As the alphas and risks across different accounts vary over time, dispersion will increase.*
 - D. *Dispersion can be minimized if a portfolio manager rebalances existing portfolios and adds new cash to match the rebalanced fund, managing old and new cash along the same risk factors and betas.*

Answer: B

You may be confused about why the last choice is not the answer because it seems to make perfect sense. The theory behind why new cash and old cash should not be identical is the old cash was built on old information within the constraints of either the customer or transaction costs and is currently optimal given those constraints. Adding new cash to a currently optimal portfolio gives up return in favor of what the manager has now as opposed to what they think is best. A technical argument, yes,

but one you need to understand, because that is the key driver of confusion about where dispersion comes from. Different investors, investing at different times, managed by the same manager along the same risk factors will have divergence of returns because the risks may be the same but the optimal asset to express that risk may be different.

The third answer is also counterintuitive. It seems that if the risk factors and alphas vary over time dispersion will increase, but think of the concept of dollar-cost averaging in a mutual fund where you invest \$100 a month over a number of years. If each investment were frozen in what securities the manager had at that time (not the net asset value, the actual bucket of securities), then the dispersion of one month to the next would never be resolved (as the manager updates with new information and changes allocation but keeps risk and risk factors the same). However, over time, as factors and allocation change, the divergence among all those individual contributions will be reduced.

6. *VaR has moved beyond a simple risk management tool to include aspects of improving the capital allocation process. Which of the following statements correctly identifies the way VaR can be used in the investment process?*
- A. *VaR can identify the relative risk among asset classes and a portfolio manager could choose the asset allocation with the lowest VaR and highest expected return.*
 - B. *VaR can be used to refine the strategic asset allocation decision by looking at the top-level risk of a portfolio and compare that risk-return profile to any other combination the manager might suggest.*
 - C. *VaR on a standalone basis can be misleading, but incremental VaR in a portfolio context can point out a portfolio that is already optimal.*
 - D. *The best use of a portfolio VaR used in the investment process is one that focuses on each portfolio individually and sums up the individual VaRs across asset classes.*

Answer: C

The issue here is that VaR in the asset allocation process is really about the incremental VaR of a portfolio. The standalone VaR may be a big number but when looking at changes to that asset allocation, the marginal VaR could be very small. That means that for large changes to the portfolio, the risk change is small, so it is not an optimal modification to the portfolio even though the standalone risk of that position may have been quite high. In this section we always want to think about the portfolio context of VaR and especially marginal VaR.

7. *There are many tools used to quantify a risk-adjusted return on a portfolio. Which of the following is paired with its correct description?*

- A. *Treynor's measure: The excess return per unit of risk, where risk is defined as the standard deviation of returns.*
- B. *Sharpe's measure: The excess return per unit of risk, where risk is defined as the standard deviation of returns.*
- C. *Jensen's measure: The measure of return that is expected from the CAPM.*
- D. *Information ratio: The alpha of a portfolio divided by the systematic risk of that portfolio.*

Answer: B

The first choice would be correct if we defined risk as the beta of the portfolio. For the third choice, Jensen is what is expected above and beyond the CAPM, and the last choice is incorrect because we divided the alpha of the portfolio by the nonsystematic risk instead of tracking error.

8. *Which of the following is not a reason that hedge funds are sometimes difficult to measure against the relative performance to other asset classes?*
- A. *A hedge fund's risk factors may change quickly and not lend themselves to standard risk measures such as VaR.*
 - B. *Hedge funds may invest in illiquid assets that are difficult to measure on a mark-to-market basis. The lack of price granularity can also underestimate volatility.*
 - C. *Survivorship bias among hedge funds is a major concern; since the failure of funds is so high, the worst performers drop out of third-party data sets.*
 - D. *Many hedge funds pursue very-short-term gains, but over long periods of time, the risk-adjusted return is in line with other broad asset classes.*

Answer: D

In the last choice, the answer is reversed. Hedge funds sometimes pursue strategies that may take a long time horizon to be profitable but are unable to stay solvent while those strategies are realized. All other answer choices are correct.

9. *The question of moral hazard often is discussed with respect to a liquidity crisis or runs on a bank. In this case, providers of short-term liquidity, who are very risk averse, pull funding from a bank. Should the market rely on a lender of last resort (LOLR) in crises, how does that create moral hazard?*
- A. *If an LOLR takes collateral for loans provided to the borrower, the LOLR faces the risk that those credit assets could default and damage the LOLR.*
 - B. *The presence of an LOLR may change an institution's views on risk and ignore liquidity or funding risks in their risk planning.*

- C. *The LOLR increases the cost of funding a bank's balance sheet because providers of that capital will demand more credit spreads if an LOLR also has to be paid.*
- D. *Moral hazard is created when the banks continue to lend and create capital knowing the LOLR could likely bail out the providers of short-term liquidity that are unable to fulfill their obligations.*

Answer: B

In all cases, moral hazard is when bad behavior doesn't match potential bad consequences. In this case, if you know the Fed or some other institution will bail you out in a liquidity crisis, then that reduces the capital you have to allocate against the potential outcome. The answer "If an LOLR takes collateral for loans provided to the borrower, the LOLR faces the risk those credit assets could default and damage the LOLR" is sneakily close. It is true that the LOLR could be forced to take on additional assets and those assets could potentially default, but that is one potential policy response an LOLR could make in response to moral hazard created by an investment bank that might expect a bailout.

10. *One of the challenges faced within the modern financial banking system is distinguishing between a bank experiencing stress because of solvency issues and a bank experiencing a macro shock. Despite what might seem an obvious difference, in the early stages of a crisis they are difficult to differentiate. How can a policy mix of liquidity regulation and LOLR lending be an optimal way to manage systemic risks?*
- A. *The conflict between keeping liquidity balances in a "lockbox" that can't be touched (liquidity requirement) and accepting a capital infusion (LOLR lending) can easily be resolved in a crisis as soon as the central bank intervenes with a mix of relaxing capital requirements and injecting capital.*
 - B. *During a systemic event, there can often be little clarity on the degree to which an institution is insolvent. By allowing the troubled institution to use some of its required capital to weather the storm, a central bank has more time to resolve the solvency question.*
 - C. *Unfortunately, liquidity regulations, by requiring larger capital buffers, can increase the incidence of central bank lending because excess capital is absorbed by the regulatory capital requirements.*
 - D. *The use of a policy mix is especially important during a time of crisis to those institutions that may not be able to borrow at the Fed yet whose failure may still cause significant market stress.*

Answer: B

For the answer choice beginning "The conflict between keeping liquidity balances in a 'lockbox,'" the opposite is

true. During a fast-moving crisis, the use of capital intended as a buffer versus a legitimate need for the central bank to step in is rarely obvious. Therefore, in certain cases, the Fed may allow an institution to meet liquidity needs by using regulatory capital and see if the crisis resolves itself. If not, the LOLR policy tool comes into play.

The answer beginning with “Unfortunately, liquidity regulations, by requiring larger capital buffers” is also the opposite of a true statement. By requiring larger capital buffers, banks have greater capacity to absorb shocks but operate less efficiently from a capital standpoint because those assets are held in near-zero-yielding assets. For the purposes of regulatory capital requirements and borrowing at the Fed, these are very large institutions and if a bank cannot borrow at the discount window, these rules and policies around what the Fed can and cannot do don’t apply, so this answer is a distractor-type question.

- 11. Failure of a central clearing party can occur when any one of its members fail and the losses overwhelm the remaining members and contagion spreads outside the ring of CCP members. Which of the following risk waterfall stages intended to stop systemic risk can actually cause contagion in certain circumstances?**
- A. Variation margin: In the event of failure, variation margin is required of the remaining members and could put additional capital strains on nondefault members, pushing them closer to default and contagion.**
 - B. Use of the remaining capital of the CCP could cause other market participants to brace for a CCP default and cause a run on the markets and liquidity.**
 - C. The assessment calls of the CCP require more capital from other members in deteriorating market conditions, putting additional strains on nondefaulting members.**
 - D. The default fund actually hitting fully funded status could cause additional stress in the markets as banks brace for default of the CCP.**

Answer: C

Part of the difficulty of the GARP exam is to keep sharp focus on exactly what is asked. For example, in the answer beginning with “Variation margin,” if margin is required of other members during times of market stress, that could, in fact, push them closer to default. However, remember what variation margin is—it is the day-over-day change in nondefaulted positions. Once a firm defaults, those trades are torn up by the CCP and the unwind process goes into effect. Other members are never liable for variation margin and that’s what makes that option sound right, but it isn’t our answer.

For the answer beginning “Use of the remaining capital,” a CCP drawing down its remaining capital isn’t a default

event. That’s something that wouldn’t be publicly known and even though drawing down its remaining capital sounds bad, that is what it is there for. This means the markets are functioning and there is no contagion. Yes, if it draws down remaining capital, is required to post more and doesn’t have it, that is a default, but don’t read more into the question than you are given.

For the option “The default fund actually hitting fully funded status ...,” the answer is opposite. When the default fund hits fully funded status, it means all members have fulfilled their obligations, the defaulting member trades are unwound, and the normal waterfall absorbs those losses.

- 12. One of the key responses to the credit crisis of 2007–2008 was the introduction of systemwide stress testing called the Supervisory Capital Assessment Program (SCAP). In 2015, this program was updated and called the Comprehensive Capital Analysis and Review (CCAR). Of the following choices, which does not correctly match the trend that emerged in the 2015 updates with the intended impact of that change?**
- A. Greater recognition of unintended consequences: If banks manage their balance sheet and capital to the results the Federal Reserve predicts, then the whole system is reliant on how robust the Fed’s models are.**
 - B. Increased focus on the potential failure of CCPs: A CCP failure could send greater shock waves through the entire system as the CCP demands collateral from other members to cover those positions, thereby creating contagion.**
 - C. Focus on aggressive capital management: As the crisis has passed, many banks are managing to the exact requirements of SCAP and CCAR instead of using them as guidelines only. This has limited the extra cushion banks maintain and may be counterproductive if the SCAP and CCAR requirements aren’t robust enough.**
 - D. Recognition that regional banks remain conservative: Large banks have refined the capital allocation process to match the stress tests exactly but regional and local banks retain much larger buffers against SCAP and CCAR requirements. This potentially means that capital intended for Main Street remains locked up in excess capital requirements.**

Answer: B

There is a lot going on in this question. The answer about increased focus on the potential failure of CCPs is the correct answer to a different question. Certainly a failure of a CCP could increase systemic risks, but this question is about SCAP and CCAR—completely unrelated to central clearing. Be ready for these easy distractors that sound “comfortable” that you may remember from other readings and choose too soon under time pressure. The remaining answer choices are the correctly paired changes and you should be comfortable with those, too.

13. You are leading a group of new interns on the trading desk and need to explain the difference between the need for the normal and lognormal distributions for different asset classes and different market environments. You first explain that since asset losses in either price or return terms are given by the VaR figure, different return distributions are assumed in different cases. Which characterization is correct?

- A. In a new volatility regime where stock prices are expected to head higher, you want to use a skewed lognormal distribution to account for the bias in higher expected returns.
- B. In a new volatility regime where stock prices are expected to remain stable, you want to use a symmetric lognormal distribution to describe the relatively stable stock prices.
- C. Penny stock prices are more likely to be modeled using the lognormal distribution.
- D. If we assume a random walk for stock prices, we should model these as a symmetric normal distribution because the next price is assumed to be close to the most recent price.

Answer: C

If we want to prevent the asset trading below zero, as we would with stock prices, then the lognormal distribution is used. The penny stock information is irrelevant. Prices are lognormally distributed. “In a new volatility regime where stock prices are expected to head higher, you want to use a skewed lognormal distribution to account for the bias in higher expected returns” is wrong because expected future returns don’t impact the choice of the distribution. Also, returns are normally distributed. “In a new volatility regime where stock prices are expected to remain stable, you want to use a symmetric lognormal distribution to describe the relatively stable stock prices” is wrong because there is no such thing as a symmetric lognormal distribution. The final option is wrong because, again, for prices we use the lognormal distribution, although everything else in the answer choice is correct.

14. Considering significant changes to volatility and correlation, you are presenting to the board of directors potential shifts in behavior to expect from the calculations of VaR and ES under various weighted simulation methods. The board is convinced the economy is entering into a period of higher volatility not unlike just after the dot-com bust of the late 1990s and has asked you to present ideas on how to accommodate those changes. You begin the presentation with the potential impact on volatility-weighted historical simulation. Which of your following characterizations during the presentation is incorrect?
- A. Volatility-weighted HS is superior because it closely matches the expected maximum loss while including

the new volatility in forward-looking VaR estimates.

- B. Volatility-weighted HS is superior to equal weighting because it actually includes changes to volatility and is superior to age-weighted HS because of the arbitrary way age-weighted HS treats older data.
- C. Volatility-weighted HS allows the incorporation of data from GARCH analysis into HS VaR and ES estimates.
- D. Volatility-weighted HS actually deletes or modifies old data by modifying prior returns with new volatility.

Answer: A

“Volatility-weighted HS is superior because it closely matches the expected maximum loss while including the new volatility in forward-looking VaR estimates” The first answer is the incorrect statement because the historical losses can be scaled upward to show losses that exceed historical losses when volatility is higher; this actually reflects reality better. This is also why “Volatility-weighted HS actually deletes or modifies old data by modifying prior returns with new volatility” is true. We do change old return data to reflect a newly expected volatility regime. Age weighting creates ghost effects when data drops out of the window for arbitrary reasons, and the equal weighting of traditional historical simulation makes that effect more pronounced. It is worth noting that volatility-weighted methods use historical data but ultimately modify it for current volatility expectations so the age-weighted historical method and the volatility-weighted method can be combined in a hybrid model—but that wasn’t the case in this question.

15. Your chief risk officer is studying the differences between generalized extreme value (GEV) theory and the peaks-over-threshold (POT) approach and the implication for VaR or expected shortfall calculations on the risk of the trading book. She makes an argument about the parameter ξ (lower case Xi, pronounced “sigh”) in both the GEV theory and POT approach that you aren’t sure is correct. Which of the following is actually true of that parameter in extreme value theory in general?
- A. In the GEV theorem, ξ is one of two parameters. The parameter estimates the range of maximum and minimum values within the tail of the distribution.
 - B. Like correlation, ξ can only take on a range of values between -1 and $+1$ and governs the loss distribution on the extreme left or extreme right-hand side of the tail.
 - C. In the POT approach, ξ is one of three variables and controls the thickness of the distribution in the tails.
 - D. ξ is used both in the POT approach and GEV theorem and is used to control the thickness of the distribution in the tails.

Answer: D

GEV theory and the POT approach are closely related. POT has two parameters, GEV has three, and both the GEV and POT share the parameter ξ , used to control the thickness of the tail of the distribution. The other answer choices are wrong because of subtle differences you should know. “In the GEV theorem...” is wrong because the GEV has three parameters, not two, and does not control the range of outcomes in the tails. “Like correlation, ξ can only take...” is wrong because ξ can take on any value but is not bound by -1 and $+1$. There are three special cases of ξ . When it is greater than zero it implies fat or heavy tails. When equal to zero it implies a more exponential distribution shape to the tail and is closer to the shape of the normal distribution in the tails. When less than zero, this parameter gives a shape over very light or thin tails, implying very few rare events.

16. With respect to correlation in credit risk, you need to evaluate the potential changes in correlation and the potential adverse impacts individually and within a portfolio. You also want to consider the type of correlation within credit risk sufficient for maximum diversification. Which of the following is an incorrect summary of the nature of changing correlation for credit risks?

- A. The pairwise default correlation is far less significant than the probability of credit migration when considering correlation and credit risk.**
- B. The event of default is a simple binary (yes/no) event and pairwise defaults are much more important within credit analysis.**
- C. The term structure of defaults is usually inverted for poor credit quality and the term structure of default for better credit quality is usually upward sloping.**
- D. For maximum diversification benefit, low pairwise default correlations are preferable to high default pairwise correlations.**

Answer: A

Within credit risk, pairwise default probability is far costlier than a different credit rating because defaults represent a much more extreme event and we know that defaults within a particular industry also increase the likelihood of other defaults within the same industry. “The event of default is a simple binary...” is true; “The term structure of defaults...” is correct because the near-term future is much more important for poorly rated companies than more stable companies. If the company can survive a year, for example, there is a higher probability that they can survive even longer. “For maximum diversification benefit...” is correct just because of the basic relationship of correlation to maximum diversification benefits.

17. You have to present to the risk committee some of the shortcomings you have found with respect to

risk reporting firmwide as a part of an enterprise risk management (ERM) review. Everything is within expectations on the backtesting of VaR but you raise concerns that the backtest uses a hypothetical portfolio that is DV01-neutral. The risk committee doesn't understand why you are concerned with a DV01-neutral backtest if the VaR exceedances were within the expected results. What would be a correct characterization of regression hedging and how it could improve on the current DV01-neutral method?

- A. In a regression hedge the asset returns are regressed against the daily DV01 of the portfolio to calculate the difference between the actual hedged portfolio return and the theoretical hedged return.**
- B. Regression hedging finds the best fit between the asset owned and the asset used to hedge so that the DV01 is minimized.**
- C. Regression hedging identifies a notional multiple of the asset to be hedged so that the difference between asset return and hedged return is minimized.**
- D. The slope of the regression in the regression hedge is the excess return that can be expected under the hedging program that is not DV01-neutral.**

Answer: C

The issue with a DV01-neutral-only hedging is basis risks. The two assets may be similar, but not identical; therefore, they don't change by the same amount all the time. This difference in volatility of returns would mean that someday the portfolio is either underhedged or overhedged. By considering this difference in asset returns, regression hedging allows us to estimate the notional difference between the hedged asset and the core asset to compensate for the differences in returns. “In a regression hedge the asset returns are regressed...” is wrong because we don't regress against the DV01 of the portfolio, and “Regression hedging finds the best fit...” is almost right—but we aren't minimizing risk here. We are minimizing the difference in the actual asset and the return asset. “The slope of the regression...” is a distractor and the regression line does not describe the excess return between the assets.

18. Financial distress can be very costly to a firm. There are the potential credit downgrades and higher costs of capital, projects that have to be passed over that could have been profitable, and potential customer losses in a credit downgrade. There are the operational costs that are required to implement an ERM program to consider, too. Based on a firm's estimate of the implicit cost associated with financial distress or credit downgrade and the explicit cost of implementing ERM, what is the best characterization of how senior management can use both of these to determine the optimal amount of risk?

- A. *Based on the firm's current credit rating and credit transition matrix, the firm estimates the cost of a downgrade and increases business risk only to the point of ensuring that a credit event doesn't occur.*
- B. *The firm determines the optimal combination of capital and risk to support the best credit rating senior management thinks it can achieve. When the cost of additional risk management is equal to the expected cost of capital savings from the additional risk management, the mix is optimal.*
- C. *In order to implement ERM, there are huge upfront costs, especially in large firms. The company needs to weigh that cost of ERM implementation against the potential cost of a credit downgrade. Management will choose whichever is cheaper, credit targeting or risk management through ERM.*
- D. *The marginal change in the cost of capital for a firm in the event of a credit downgrade is calculated. If that cost of capital increase is less than the cost of ERM, a firm will choose to continue to target a specific rating rather than using an ERM program.*

Answer: B

There is quite a lot of information here and you should be ready for questions like this on exam day. First, we know there is some combination of ERM and cost of capital we should focus on. The question is, How does that drive the risk-taking decision? If the first option were possible—if a firm could ensure that no credit downgrades could occur if it only takes some level of risk—then risk management wouldn't be necessary. The first option is wrong because while it makes sense only to increase risk to a point the firm estimates would trigger a downgrade, there is no way to ensure that actually happens. You should get in the habit of thinking about ERM as not a onetime event but as an ongoing process, and neither is mutually exclusive. ERM can actually help target a specific rating and that is why the third option is wrong. The fourth option is almost just like the third one but sounds a bit better. The second option is the only one that talks about the cost of capital and risk taking to determine the point where the cost of more risk management equals the cost of capital savings on that extra risk.

- 19. Operational risk modeling can vary a lot according to the type of business the investment bank engages in. Which type of banking is not correctly paired with Basel II's seven categories of operational risk classification with the greatest frequency and severity for that type of banking?**
- A. *Trading and Sales: The highest frequency and severity of events occur in the Execution, Delivery, and Process Management silo of the Basel II classifications.*

- B. *Corporate Finance: Both the highest frequency and severity of operational losses occur within the Clients, Products, and Business Practices silo of Basel II's seven categories.*
- C. *Retail Banking: The highest frequency of loss occurs because of Business Disruption and System Failures, but the highest severity of losses occurs within the Clients, Products, and Business Practices.*
- D. *Asset management: The highest loss and frequency both occur in the Execution, Delivery, and Process Management silo.*

Answer: C

System failure accounts for around 1% of operational losses in retail banking so that is at the very low end of possible risks, and that is what makes the third answer choice wrong. Each other answer is properly categorized.

Note: Don't worry too much if you are getting these wrong. I think it is highly unlikely that you will see this type of ranking on the exam, but it is important to know where each of the sectors' biggest risks are.

- 20. Calculate the operational risk charge under Basel II using the standardized approach for the following data:**

(In \$millions)	Year 1	Year 2	Year 3
Commercial banking	12	3	-4
Asset management	12	45	-12
Retail brokerage	3	21	-13

Under the standard method, the operational capital charge is closest to:

- A. **\$22.35**
- B. **\$4.00**
- C. **\$33.50**
- D. **\$48.00**

Answer: B

The standard method has two different rules for handling negative capital in any given year. First, negative gross income in any given year creates negative gross capital charges that can be used to offset positive capital charges in any other business line without any limit or cap. However, if the total capital charge within a given year is negative, that year won't create a large negative capital charge; rather a zero is inserted into the numerator for that year (the denominator will always remain 3). Under the standard method, a zero in the numerator for a negative year does not change the denominator at all.

The remaining answer choices are iterations of missing the rule about how to handle negative income.

For reference, the following table shows the business lines and the beta factors used to calculate the capital charge.

(In millions)	Year 1	Year 2	Year 3	Year 1 and 2 Sum	Capital Charge
Commercial banking	12	3	-4	15	2.25
Asset management	12	45	-12	57	6.84
Retail brokerage	3	21	-13	24	2.88
				Total	3.99

21. Some firms use a hybrid method to model operational risk capital. What limitation or benefit does this have over the use of loss distribution analysis or Monte Carlo simulation alone?

A. The hybrid method uses the actual frequency of losses based on actual internal data but simulates the severity of those actual events based on the distribution chosen to model the severity of those events should they occur again in the future.

- B. In the hybrid method, the frequency of events is simulated using a Poisson distribution as the default mechanism to define events but the actual severity of loss data is used (based on 3 years prior data) to model the potential severity of future events.**
- C. Simulation based on hybrid methods relies on operational loss data as it occurred in the past and depends on the simulation of future extreme events to create the potential severity of that event.**
- D. The hybrid method will fit a Poisson curve to prior operational risk events and then use the same event structure to model future potential events based on a severity distribution fitted to historical loss data.**

Answer: C

Think of the hybrid method as “stitching” two distributions together. In the past we have our actual loss data and in the future we rely only on simulations. All the other answer choices have some overlap in the past or future with observed or simulated data when, in fact, those two are completely distinct. One can inform the other but there is a clean break in the two.

*Good luck and stay on track.
Remember, good preparation is essential to success.*

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