

In the
United States Court of Appeals
For the Seventh Circuit

No. 15-1180

UNITED STATES OF AMERICA,

Plaintiff-Appellee,

v.

YIHAO PU,

Defendant-Appellant.

Appeal from the United States District Court for the
Northern District of Illinois, Eastern Division
No. 11 CR 00699 — **Charles R. Norgle**, *Judge*

ARGUED MAY 26, 2015 — DECIDED FEBRUARY 24, 2016

Before BAUER, KANNE, and WILLIAMS, *Circuit Judges*.

WILLIAMS, *Circuit Judge*. Yihao Pu worked for two companies, “Company A¹” and Citadel, which are financial institutions that traded stocks and other assets on behalf of clients. While working at each company, Pu copied computer files

¹ The parties’ briefs refer to the organization as “Company A,” so we will do the same.

from his employer's system to personal storage devices. The files were part of each company's proprietary software that allowed them to execute strategic trades at high speeds. The files were company trade secrets, and Pu's copying of the files was a significant data breach.

Normally, crimes involving the theft of computer data trade secrets lead to the sale of the data to, or the thief being hired by, a company that will use the data. But here, Pu used the data to conduct computerized stock market trades for himself and lost approximately \$40,000.

Pu was indicted and pleaded guilty to one count of unlawful possession of a trade secret belonging to Company A, and one count of unlawful transmission of a trade secret belonging to Citadel. The district court sentenced him to 36 months in prison and ordered him to pay over \$750,000 in restitution. Pu appeals, arguing that the district court's factual findings did not support its conclusion that Pu intended to cause a loss to the companies of approximately \$12 million. We agree. Pu also challenges the district court's failure to require the government to provide a complete accounting of the loss caused by his offense before it determined the amount of restitution owed. We also agree that the district court erred by awarding restitution without evidence that reflected a complete accounting of the victims' investigation costs.

I. BACKGROUND

Yihao Pu is a twenty-eight-year-old quantitative finance ("QF") professional.² Pu worked as a QF analyst at Company

² QF professionals apply mathematical concepts and techniques to financial markets.

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A from July 2009 to March 2010 and as a QF engineer at Citadel from May 2010 to August 2011.

Company A and Citadel, the victims in this case, are financial firms that engage in high frequency trading ("HFT"). HFT is the rapid buying and selling of publicly traded stocks. Both companies developed proprietary computer programs, which we will call HFT platforms, that perform the tasks necessary to execute trades at lightning fast speeds when certain market events occur. Company A and Citadel's HFT platforms are valuable trade secrets. Both companies use their HFT platforms to conduct trades for themselves or their clients. Company A also developed infrastructure software, which is sold to customers and allows them to execute their own high frequency trades using Company A's technology.

Each company put substantial money and time into creating its unique HFT platform. For their respective entities, Company A and Citadel employees developed and implemented HFT strategies by analyzing and utilizing mathematical and statistical models of investment instruments and market activities. The HFT strategies identified short-term investment opportunities in the stock market or other asset markets. This information was then translated into algorithms. The algorithms were basically computerized instructions for when to order a trade. They were incorporated into the computer source code that ran the HFT platforms or Company A's infrastructure software. Citadel's algorithms also generated outputs that were expressed as numerical values, which Citadel called alpha data. The algorithms also contained alpha terms, which generated numerical values, which Citadel called alpha term data. Both alpha data and alpha term data are component parts of Citadel algorithms and not algorithms

or source code themselves. The numerical value derived from this application reflects a specific moment in time. Lastly, Citadel's trade secrets also included program files in the "R" and "C" programming languages ("R/C files") that are not algorithms themselves, but are used to test and optimize an algorithm's effectiveness.

While working at Company A and then Citadel, Pu illegally copied files that were trade secrets belonging to each company and transferred the files to personal electronic storage devices. Specifically, he copied Files 1 and 2 from Company A's HFT platform and infrastructure source code. Pu copied Files 3–9 of alpha and alpha term data owned by Citadel. Files 3–6 were alpha data owned by Citadel. Files 3–4 also included alpha term data. Files 7–9 were R/C files owned by Citadel. Suspicious of the activity on Pu's work computer, Citadel questioned Pu and conducted an internal investigation to figure out the extent of the data breach related to Pu's criminal activity.

The grand jury charged Pu with nine counts of wire fraud, 18 U.S.C. § 1343, four counts of unlawful transmission of trade secrets, 18 U.S.C. § 1832(a)(2), six counts of unlawful possession of trade secrets, 18 U.S.C. § 1832(a)(3), three counts of unauthorized access of a protected computer, 18 U.S.C. § 1030(a)(2)(C), and one count of obstruction of justice, 18 U.S.C. § 1519. Pursuant to a written plea agreement, Pu pleaded guilty to one count of unlawful possession of a trade secret belonging to Company A and one count of unlawful transmission of a trade secret belonging to Citadel.

At sentencing, the district court adopted the Presentence Investigation Report ("PSR") and its findings for sentencing purposes. The parties agreed, and the district court found,

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that there was no actual monetary loss. Pu objected to the PSR's loss calculation with respect to the intended loss amount arguing that there was no intended loss. However, the district court disagreed. Relying on the government's calculation and the findings in the PSR, the district court found that total development costs of the algorithms or source code was the appropriate metric to value the files Pu stole. From the evidence, the district court concluded that Files 1 and 2 cost Company A \$2,192,250 to develop and Files 3–9 cost Citadel \$10,102,647 to develop. Ten million dollars was attributed to Files 3–6 and \$102,647 was attributed to Files 7–9. These figures essentially represent how much money the companies paid their respective employees to develop the algorithms or source code, excluding overhead. The district court added these totals and found that the intended loss amount was \$12,294,897.

In calculating Pu's advisory guidelines sentence under U.S.S.G. § 2B1.1 (2014), the district court determined that Pu's base offense level was a six. The court imposed a two-level increase for each of the following: (a) use of a specialized skill, (b) sophisticated means, and (c) obstruction of justice. This brought his offense level to 12. As stated above, the district court found that the government had met its burden to prove intended loss and held that the combined intended loss to both victims was approximately \$12,000,000. This loss calculation resulted in an additional twenty-level increase. After factoring in a two-level decrease for acceptance of responsibility and one-level decrease for a timely guilty plea, the sentencing judge reduced Pu's offense level to 29. Because he has a criminal history category I, his guideline-recommended sentence was 87–108 months.

While examining the sentencing factors under 18 U.S.C. § 3553, the district court found that although there was evidence that hinted that Pu had a larger scheme to use the stolen files, the only criminal conduct here that was proven was that Pu copied the files onto his personal electronic storage device, and the government had not presented sufficient evidence of a greater plan than what Pu actually achieved. Noting Pu's youth, his family ties, and his lack of prior criminal history, and balancing this information with the seriousness of the crime, the district court determined that the guidelines sentence overstated the seriousness of the offense and departed downward, sentencing Pu to 36 months' incarceration. The district court also sentenced Pu to three years of supervised release.

The district court found that although there was no actual loss for guidelines purposes, Citadel incurred an actual loss for restitution purposes. Citadel spent money on computer forensic analysts and attorneys during its internal investigation after the initial discovery of Pu's criminal activity, which is recoverable as restitution. Because Citadel also has ongoing civil litigation against Pu and the lack of detail in the government's letter from Citadel regarding restitution, Pu argued that Citadel had included in its restitution figure analysts and attorneys' fees associated with the civil litigation and objected to the restitution figure. The district court overruled the objection, relying on a letter from Citadel that stated that the restitution amount requested did "not include the amount that Citadel paid other outside legal counsel to represent Citadel

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in its civil suit against Pu.” The district court then held Pu liable for restitution to Citadel in the amount of \$759,649.55.³ Pu appeals his sentence challenging the loss calculation and the restitution amount.

II. ANALYSIS

Pu challenges the district court’s intended loss calculation of \$12,000,000, which resulted in a twenty-point enhancement. Pu makes many arguments to support his challenge, but generally, he contends that the district court’s findings do not support its loss calculation. We agree.

We review *de novo* the district court’s definition of loss, the method it uses to measure the loss, and the sentencing procedure. *United States v. Domnenko*, 763 F.3d 768, 775 (7th Cir. 2014). We review the district court’s loss calculation for clear error. *Id.* When evaluating the district court’s sentencing procedure, we look to see if the district court properly calculated the guidelines range, treated the guidelines as advisory, selected a sentence based on facts that were not clearly erroneous, and adequately explained the chosen sentence. *See Gall v. United States*, 552 U.S. 38, 51 (2007).

We have often stated that “[t]he district court must say enough to ‘satisfy the appellate court that it has considered the parties’ arguments and has a reasoned basis for exercising its own legal decisionmaking authority.’” *United States v. Marin-Castano*, 688 F.3d 899, 902 (7th Cir. 2012) (quoting *Rita v. United States*, 551 U.S. 338, 356 (2007)). The district court

³ There was a co-defendant in this case, Sahil Uppal, who worked with Pu at each company. Uppal is not relevant to the appeal, but we acknowledge that the district court held Pu and Uppal jointly and severally liable for the restitution amount.

must address “a defendant’s principal arguments that are ‘not so weak as to not merit discussion.’” *United States v. Howard*, 729 F.3d 655, 664 (7th Cir. 2013) (quoting *United States v. Cunningham*, 429 F.3d 673, 679 (7th Cir. 2005)). This is an important procedural rule. *United States v. Lockwood*, 789 F.3d 773, 783 (7th Cir. 2015) (quoting *Gall*, 552 U.S. at 50).

A. District Court’s Intended Loss Calculation Was Clearly Erroneous.

At the sentencing hearing, the parties agreed that there was no actual loss, and the district court entered a finding of no actual loss. The parties disputed the intended loss amount. Pu objected to the PSR’s loss calculation, specifically arguing that the cost to Citadel of developing the source code that produced the outputs Pu stole should not be imputed wholesale to the value of the stolen data because the outputs of the source code are not the same, or as valuable, as the source code that was developed by Citadel employees. He also argued that the intended loss amount should be zero, or at most \$2,000, because the government failed to prove that Pu intended to copy the source code or do more than use the outputs to conduct personal trades. For both these reasons, Pu argued, the underlying conduct was not tied to the PSR’s loss calculation.

The general rule is that the district court determines the greater of actual or intended loss. U.S.S.G. § 2B1.1 n.3(A) (2014). The guidelines define intended loss as “the pecuniary harm that was intended to result from the offense,” which “includes intended pecuniary harm that would have been impossible or unlikely to occur.” *See id.* at n.3(A)(ii). Pecuniary harm is monetary harm or a harm that is readily measurable in money; it does not include non-economic harm. *Id.* at

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n.3(A)(iii). “Intended loss analysis, as the name suggests, turns upon how much loss the defendant actually intended to impose” on the victim, regardless of whether the loss actually materialized or was even possible. *United States v. Higgins*, 270 F.3d 1070, 1075 (7th Cir. 2001); *see also United States v. Middlebrook*, 553 F.3d 572, 578 (7th Cir. 2009) (“[T]he true measure of intended loss [is] in the mind of the defendant.”).⁴ The phrase “result from” imposes a requirement of but-for causation. *See Burrage v. United States*, 134 S. Ct. 881, 886–88, 891 (2014) (finding when a statute does not define the phrase “result from,” the court should give it its ordinary meaning, which is actual or but-for causation). Finally, if a loss occurred but the sentencing court cannot reasonably determine the amount of the loss, it may use the gain that resulted from the offense as an alternative measure to estimate the loss amount. *See* U.S.S.G. § 2B1.1 n.3(B).

The district court need only make a reasonable estimate of the loss amount. *Id.* at n.3(C). As relevant here,

The estimate of the loss shall be based on available information, taking into account, as appropriate and practicable under the circumstances, factors such as the following:

(i) The fair market value of the property unlawfully taken, copied, or destroyed; or, if the fair market value is impracticable to determine or inadequately measures the harm, the cost to the victim of replacing that property.

⁴ The current version of the guidelines seems to incorporate this principle into the notes, defining intended loss as “the pecuniary harm that the defendant purposely sought to inflict.” *See* U.S.S.G. § 2B1.1 n.3(A)(ii) (2015).

(ii) In the case of proprietary information (*e.g.*, trade secrets), the cost of developing that information or the reduction in the value of that information that resulted from the offense.

Id. at n.3(C)(i)–(ii). And “[t]he government must show the loss amount caused by the conduct of conviction and other relevant unlawful conduct by a preponderance of the evidence.” *United States v. Khan*, 771 F.3d 367, 379–80 (7th Cir. 2014).

The probation officer explained the PSR’s intended loss calculation relied on the guidelines statement that the sentencing judge may estimate the loss amount by considering “[i]n the case of proprietary information (*e.g.*, trade secrets), the cost of developing that information or the reduction in the value of that information that resulted from the offense.” U.S.S.G. § 2B.1. n.3(C)(ii); *see also* Sent’g Hr’g Tr. 31. She further explained that “the total amount of loss is based on the figure that was provided by Citadel, that their cost for research and development to build that information that was stolen was approximately the 10.1 million, and that [Company A] ... provided a figure of approximately 2.6.” Sent’g Hr’g Tr. 31.

The government explained the \$12 million slightly differently, labeling its calculation as “intended loss” but seemingly describing Pu’s gain, stating:

[T]he intended loss is calculated in terms of the amount of work and effort that went into creating the trade secrets. That’s where this \$12 million figure comes from. ... Citadel didn’t lose the value of its employees’ salaries or wages or costs. It just goes into the Court’s determination of whether he was intending to obtain this product from Citadel unlawfully, and the costs that basically he avoided by stealing these things rather than creating them on his own.

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Id. at 19–20.

In making the loss determination, the district court found that:

[T]he government's version [of the loss amount] states that the intended loss that should be applied to Defendant Pu's participation in the instan[t] offense is approximately \$12,745,796. This includes approximately \$10,102,647 in research and development costs Citadel spent; approximately \$2,643,149 [Company A] spent; for the trade secrets Defendant Pu stole from both companies.

It is Defendant Pu's position that the loss attributable to his participation in the instant offense is zero?

And I have already said that the Court would adopt the findings of the probation department, and cited numerous cases to support that position. And a defendant who wishes to challenge a factual finding in the PSR must do so with evidence, and not with simple denials.

I think there is enough certainly from the government's standpoint—and as established by the probation officer's determination—that the loss here, foreseeable loss is \$12 million.

Id. at 31–32.

Later, when looking at the 18 U.S.C. § 3553 factors the district court stated that:

The evidence is not quite clear on whether you might have gone beyond what you did in this case had you not been interrupted; had your employers and others not discovered what you had been doing. One view might be that this was embryonic and there was more to come. But there is no solid evidence to indicate that you would have used these secrets to try to help yourself to improve your financial situation. There is no evidence before the Court to suggest that there was some grander scheme or some

grand plan or design to what you were doing. There are suggestions or hints of it, but not enough for the Court to say that this was just the beginning of a greater endeavor on your part. And so it appears that it did begin and end with what you did in the case.

Id. at 79–80.

We do not doubt that the cost of development of the trade secrets was an easy figure to use when making the intended loss calculation. The guidelines suggest that the cost of development is the metric to use to estimate loss in a trade secrets case. *See* U.S.S.G. § 2B1.1 n.3(C)(ii). But the real question is whether the government proved by a preponderance of the evidence that the cost of development of the trade secrets was the correct loss figure. *See United States v. Berheide*, 421 F.3d 538, 541 (7th Cir. 2005). To answer this, we must determine whether the record supports a finding that it was more likely than not that Pu intended to cause a loss to the victims that equaled the cost of development. *See id.* We conclude that it does not. There is no direct evidence of how much of a loss Pu intended Company A and Citadel to suffer. There is also no evidence from which we can infer how much of a loss Pu intended the victims to suffer. The evidence shows that the cost of development was \$12 million.⁵ By finding a \$12 million intended loss amount, the district court determined that the

⁵ It is arguable whether the figure for the cost of development of Citadel Files 3–6 was correct since these files were only component parts of an algorithm. The government presented evidence of the cost of development for the algorithms that generated the component parts, Files 3–6, that Pu stole. Is the cost of development of the algorithms that generated the component parts stolen the same as the cost of development of the component parts only? The record does not answer this question. And the district court did not address Pu’s argument that raised this concern. *See infra* § II.B. Since we do not need to answer it to determine whether there was

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government proved by a preponderance of the evidence that Pu intended to cause the victims to suffer a \$12 million loss. However, evidence of Pu's intent to cause the victims any loss is not in the record. Because the record does not support the district court's conclusion, we find it to be clearly erroneous.

The record does not provide enough information for us to determine what the correct intended loss amount is.

It seems that the probation officer and the district court simply looked at the evidence and determined that an intended loss amount was required because there was no actual loss. Then, because the guidelines state that the court may estimate loss in a trade secrets case by considering the value of the trade secrets, they simply stated the trade secrets' purported value was the intended loss amount without any analysis about whether that metric worked with the circumstances of Pu's case. The guidelines state that in a trade secrets case, the cost of developing the information should be a factor taken into account to estimate the loss amount when the factor is "appropriate and practicable under the circumstances." U.S.S.G. § 2B1.1 n.3(C). Without evidence of Pu's intent to cause the victims to suffer a loss equal to the cost of development, the district court's use of the cost of development to determine the intended loss amount was not appropriate.

Moreover, as a practical matter, the district court's intended loss calculation conflicts with its finding that there was insufficient evidence of a grander scheme that was interrupted. Intended loss is often used to capture the loss the victim would or could have suffered had the offender been able

an error, we assume, for purposes of this appeal, that the \$12 million figure accurately represented the cost of development.

to complete his interrupted criminal scheme. Here, the district court found that the government did not prove that Pu was interrupted before completing a criminal act. His conduct was merely what was charged. The district court did not explain how Pu intended to cause a \$12 million loss through his conduct, whether by considering charged conduct or relevant conduct. Usually, we can clearly see how the loss would have come about. For example, say, a defendant stole a credit card with a \$20,000 limit. There was evidence that he intended to make enough purchases with the credit card to reach the credit limit, but he was caught and charged with stealing the credit card before he had the opportunity to use it. *Cf. United States v. Mei*, 315 F.3d 788, 791–93 (7th Cir. 2003). Like Pu’s case, there would be no actual loss to the owner of the credit card. Unlike Pu’s case, however, we could clearly see that an intended loss amount of \$20,000 would be proper because there was evidence that he intended to purchase items until he reached the credit limit of the credit card. Here, the district court’s only finding regarding Pu’s intent further suggests that the intended loss finding was erroneous.

“Where a district court selects a guidelines range by relying on a clearly erroneous factual finding, ‘we are obliged to remand for resentencing unless, reviewing the record as a whole, we can conclude that the error was harmless, i.e., that the error did not affect the district court’s selection of the sentence imposed.’” *United States v. McMath*, 559 F.3d 657, 670 (7th Cir. 2009) (quoting *United States v. Hollis*, 230 F.3d 955, 958 (7th Cir. 2000)). It appears that the erroneous loss calculation affected the sentence. Without a correct intended loss finding there is no basis for the twenty-point offense level increase. Although the district court departed downward, it may have sentenced Pu differently had it been departing from

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a different guideline range. We must vacate and remand for resentencing. *See Berheide*, 421 F.3d at 541–42 (holding that the district court’s erroneous factual finding as to the intended loss amount justified a remand).

B. District Court Erred by Failing to Address Pu’s Arguments.

As stated above, Pu disputed the loss calculation, specifically arguing that the cost to Citadel of developing the source code should not be used because Pu only stole the outputs the source code generated, not the actual source code. Neither the PSR nor the record of the sentencing hearing addressed this argument. The full value of the development of the source code was attributed to Pu’s theft without comment. Pu also argued that because the government presented no evidence that he intended to do more than he actually did with the stolen outputs, which both sides agreed generated no actual loss, the intended loss should be zero, or at most \$2,000. We find that Pu’s arguments were not frivolous.

A district court’s failure to explain the rejection of a non-frivolous argument requires resentencing. *United States v. Martin*, 718 F.3d 684, 687 (7th Cir. 2013); *see also United States v. Villegas-Miranda*, 579 F.3d 798, 801 (7th Cir. 2009) (“The court must state its reasons for rejecting a defendant’s principal arguments if the arguments have merit.”). In the loss calculation, neither the PSR nor the district court addressed or analyzed these arguments. By not addressing these arguments, the district court erred. *See Martin*, 718 F.3d at 687–88; *see also Rita v. United States*, 551 U.S. at 356–57 (finding that the district court “should set forth enough [of an explanation] to satisfy the appellate court that he has considered the parties’ arguments”). This is true even though the district court gave

detailed reasons for the sentence it imposed. *See Villegas-Miranda*, 579 F.3d at 802. The error is not harmless “because we can never be sure of what effect it had, or could have had, on the court’s decision.” *Id.*

Additionally, in adopting the PSR, the district court admonished the defense that a challenge to a factual finding must be done with evidence and not “simple denials.” Pu had challenged the factual findings with more than denials. He submitted a written report of an expert on his behalf. Although the district court later acknowledged, during arguments concerning § 3553(a) factors, that the defendant had supported his position with written submissions, it did not address or engage in any analysis of these materials. From the record of the sentencing hearing, the district court appears to have taken no consideration of the defendant’s expert materials in making its loss calculation or determining Pu’s sentence. The evidence may have had, at least, some effect on the intended loss calculation. *See United States v. Schneider*, 930 F.2d 555, 559 (7th Cir. 1991). Again, because of the district court’s silence on the issue, we cannot be sure of the effect that the evidence had, or could have had, on Pu’s sentence. *See Leiskunas*, 656 F.3d at 738. On remand the district court should address Pu’s arguments and evidence when calculating the intended loss amount.

C. Finding of Economic Loss Not Required.

For the sake of completeness, we will address the mistake of law Pu alleges. Pu argues that the district court erroneously believed that it was required to find an economic loss because Pu was convicted. It is unclear what the district court believed, but our impression from the record is that the district

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court may have thought that Pu's conviction mandated a finding of an economic loss to the victims of an amount that was greater than zero. No such finding was required.

Pu argued at sentencing that the proper loss calculation in this case was zero because he did not intend to cause financial harm to either of the victims of his theft. When Pu's counsel made this argument, the district court asked whether this meant that the case should not have come to court, suggesting that it thought that it must find some loss amount for a crime to exist. The statute of conviction, 18 U.S.C. § 1832, does not explicitly require an economic loss to the victim. *See* 18 U.S.C. § 1832(a)(2)–(3) (“Whoever, with intent to convert a trade secret ... to the economic benefit of anyone other than the owner thereof” copies or possesses a trade secret shall be fined or imprisoned.); *see also United States v. Hanjuan Jin*, 733 F.3d 718, 721–22 (7th Cir. 2013) (finding that the “government does not have to prove that the owner of the trade secret actually lost money” because of the theft and noting that although the stolen trade secrets may have economic value, it may be impossible to monetize the value, or the injury may be the uncovering of the fact that a company cannot protect its trade secrets). Further, Pu's plea agreement admits that he intended to convert a trade secret for economic benefit to someone other than the owner, not that he intended to cause an economic loss to the victims.

Additionally, the guidelines do not require a loss calculation greater than zero. *See Schneider*, 930 F.2d at 559. The loss determination is a special offense characteristic that increases the guidelines offense level. The loss amount leads to “bonus punishment points,” which express a reasonable estimation of the victim's financial loss. *Id.*; *see* U.S.S.G. § 2B1.1(b) &

n.3(A),(C); *see also United State v. Lopez*, 222 F.3d 428, 437 (7th Cir. 2000) (“Additional punishment is merited where sufficient evidence provides for determination of monetary loss.”). If there was a loss, but it cannot reasonably be determined, the district court could look at Pu’s gain. U.S.S.G. § 2B1.1, n.3(B).

“A mistake of law generally satisfies clear error, de novo,” or abuse of discretion review. *McMath*, 559 F.3d at 663 n.2. If the district court misunderstood the law, it would have committed an error requiring remand. However, because we reverse on other grounds, we need not decide whether the district court misunderstood the law. We include this analysis to aid the district court on remand.

D. District Court Erred Deciding Restitution Amount.

Pu contends that the district court erred by failing to require the government to provide a complete accounting of the victim’s losses and authorizing a restitution amount that was unreasonable, lacked evidentiary support, and included prohibited expenses incurred by Citadel in connection to its civil lawsuit against Pu. Although Pu challenged the restitution amount below, he only argued that the restitution amount was improper because the government’s evidence lacked specificity and included expenses from Citadel’s civil case. The government argues that Pu “twice affirmatively represented during the sentencing hearing that [he] had no objection to restitution for expenses incurred during Citadel’s internal investigation.” But the two statements the government relies on do not establish a waiver of these issues. Defense counsel stated that the measure of restitution should be Citadel’s costs related to its internal investigation and that he “would not object to [costs] that had to do with [its] internal

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investigation if the costs were reasonable.” These assertions concede that restitution is due for Citadel’s internal investigation costs. They do not affirmatively state that Pu had no objection to the expenses occurred during the investigation. We find no waiver. However, because Pu did not make the reasonableness and sufficiency of the evidence arguments at the time of sentencing, we will review those issues for plain error. *See, e.g., United States v. Walker*, 746 F.3d 300, 308 (7th Cir. 2015).

Because Pu argued below that the restitution amount included prohibited expenses, we review that issue for abuse of discretion. *See United States v. Hosking*, 567 F.3d 329, 331 (7th Cir. 2009). In this context, we view the evidence in the light most favorable to the government. *Id.* “We will disturb a restitution order only if the district court relied upon inappropriate factors when it exercised its discretion or failed to use any discretion at all.” *United States v. Havens*, 424 F.3d 535, 538 (7th Cir. 2005). When “the record does not sufficiently support [the district court’s] conclusions or clarify its reasoning, then we ask that the court provides us with that information, including its specific findings of fact, to facilitate our review.” *United States v. Menza*, 137 F.3d 533, 538 (7th Cir. 1998). A restitution award may include costs incurred by a corporate victim in conducting an internal investigation of the offense. *Hosking*, 567 F.3d at 332. This may include attorney fees or fees paid to other professionals hired to participate in the investigation. *See id.*

The government entered into evidence a letter signed by Shawn Fagan, senior deputy general counsel at Citadel, which stated that Citadel sought \$759,649.55 in restitution. The letter also stated that the amount reflects what Citadel

spent on computer forensic analysts and the outside legal counsel that it hired to conduct an internal investigation after it discovered Pu had copied data:

Specifically, Citadel paid legal counsel \$151,500.50 to conduct its internal investigation This amount reflects 323.7 hours of work, billed by nine lawyers, paralegals, and legal assistants with hourly billing rates ranging from \$115.50 to \$630. During this period, Citadel paid FTI \$608,149.05 for 1818.8 hours of work billed by sixteen analysts with hourly billing rates ranging from \$171 to \$567.

The letter also indicated that the amount did not “include the amount that Citadel paid other outside legal counsel to represent Citadel in its civil suit against Pu” or expenses. On this evidence, the district court essentially found that the costs were not related to the civil case. The district court was within its discretion in making this finding because the record supports it. Nonetheless, the restitution determination suffers from an error.

“The district court is required to base its restitution order, to the extent practicable, on a ‘complete accounting’ of the loss.” *Hosking*, 567 F.3d at 332. Defendant argues that the restitution amount is unreasonable and lacks evidentiary support because the Fagan letter fails to give a complete accounting of the losses. We agree.

In *Hosking*, the government sought restitution to reimburse a bank for expenses for its internal investigation. To support its request for restitution, the government submitted a single document that listed the name and title of each bank employee who worked on the investigation, the employee’s hourly wage, and the number of hours spent on the investigation. The document included a brief description of the scope of the investigation and what a few employees did, but

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generally failed to describe the work done by each employee. The district court reviewed the evidence and cut the requested amount in half, finding restitution proper and that the reduced amount was “clearly legitimate.” *Id.* at 331–33. We vacated and remanded the restitution order because we found that the district court entered the order without explaining why it relied on the document and without requiring evidence that the costs reported were directly and reasonably caused by Hosking’s fraud. The lack of detail left us unable to discern whether the costs incurred by each employee’s work on the investigation were appropriate and reasonable. On remand, we required the government to submit evidence and an explanation of how each employee’s time was spent on the investigation. We further stated that “there must be an adequate indication that the hours claimed are reasonable” and that the costs were incurred in investigation of the fraud. *Id.* at 344.

Citadel’s restitution letter suffers from many of the same deficiencies as the *Hosking* restitution evidence. As a result, the district court erred by awarding restitution without evidence that reflected a complete accounting of the investigation costs. The letter does not explain how any attorney’s time was spent on the investigation, and there is no information that provides an adequate indication that the hours were reasonable. Even the *Hosking* restitution evidence provided some description of what employees did to investigate the fraud. Here, we do not know what work the attorneys did. The district court concluded that the amount included divers that were hired to retrieve hard drives from a canal and money spent cooperating with the Federal Bureau of Investigation. Did the attorneys do these activities, or was it the forensic analysts? There is simply not enough information in the record

for us to meaningfully review the restitution order. As to the forensic analysts, the record reveals that they analyzed data to determine what data was taken and where that data was stored. That information is helpful, but it does not help us evaluate whether the cost incurred for over 1,800 hours of work in a one-month period was reasonable. A letter like the one submitted coupled with invoices from the firms would be more helpful. This was a tough case. The district court had complex issues to work through in order to sentence Pu. As in *Hosking*, the government must provide an explanation, supported by evidence, of how each professional's time was spent investigating the data breach, being certain that the evidence provides "adequate indication that the hours claimed are reasonable." *Id.* at 334. Then, the court must ensure that the amount claimed was in fact incurred by the investigation of Pu's misconduct. *Id.*

In light of *Hosking*, we find the district court's error plain. We are only required to correct such error if it affects Pu's substantial rights. *United States v. Kieffer*, 794 F.3d 850, 854 (7th Cir. 2015). By awarding a restitution amount without a complete accounting, the district court may have required Pu to pay more restitution than he owed. This error affects Pu's substantial rights. *See United States v. Allen*, 529 F.3d 390, 397 (7th Cir. 2008). So, we vacate the restitution order.

III. CONCLUSION

For the reasons stated, we VACATE Pu's sentence and the restitution order and REMAND for resentencing.