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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte AXEL VISCHER

Appeal 2019-004649
Application 14/968,227
Technology Center 3600

Before NORMAN H. BEAMER, ADAM J. PYONIN, and GARTH D. BAER, *Administrative Patent Judges*.

BAER, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant[1] appeals under 35 U.S.C. § 134(a) from the Examiner's Final rejection of claims 1–15, which are all pending claims. Appeal Br. 2. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

BACKGROUND

A. The Invention

Appellant's invention is directed to providing "an index reflective of the relationship between credit and equity markets" that "represents a gauge for both tail risk in the equity market as well as default risk in credit markets over a given time horizon." Spec. ¶ 20. Independent claim 1 is representative and reproduced below:

> 1. A computer-implemented method executed by one or more computing devices for manipulating a plurality of data sets to generate a final data set, the final data set comprising data representing an index and the plurality of data sets comprising a first data set, a second data set and third data set, the method comprising:
>
> determining the first data set, the first data set comprising price information of an equity-option of a first company;
>
> using the first data set to generate the second data set, wherein generating the second data set comprises reading the price information from the first data set, estimating a volatility of an equity price of the first company based on the read price information, and writing the estimated volatility to the second data set;
>
> using the second data set to generate the third data set, wherein generating the third data set comprises reading the estimated volatility from the second data set, calculating a default

[1] We use the word "Appellant" to refer to "applicant" as defined in 37 C.F.R. § 1.42. Appellant identifies Deutsche Borse AG as the real party in interest. Appeal Br. 2.

> probability based on the estimated volatility, the default probability being a probability that the equity becomes worthless over a defined time horizon, and writing the default probability to the third data set; and
>
> using the third data set to generate the final data set, wherein generating the final data set comprises reading the default probability from the third data set, calculating an index level using the calculated default probability and storing the calculated index level to the data representing the index.

Appeal Br. 24 (Claims Appendix).

B. The Rejection on Appeal[2]

The Examiner rejects claims 1–15 under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. Final Act. 8.

ANALYSIS

We have reviewed the Examiner's rejection in light of Appellant's arguments. Arguments Appellant could have made but chose not to make are waived. *See* 37 C.F.R. § 41.37(c)(1)(iv). Except where noted, we adopt the Examiner's findings and conclusions as our own, and add the following primarily for emphasis.

A. Ineligible Subject Matter Rejection of Claims 1–15

The Examiner determines the claims are patent ineligible under 35 U.S.C. § 101 because the claims recite "a fundamental economic practice" and "a method of organizing human activity" in which "[t]he additional

[2] The rejection of claims 1–15 under 35 U.S.C. § 102(a)(2) has been withdrawn in the Answer. See Final Act. 14, Ans. 3.

operations performed by the claimed method [] implement the abstract idea of generating an index." Ans. 4; *see also Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 217 (2014) (describing the two-step framework "for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts").

After Appellant filed the Appeal Brief, the USPTO published revised guidance on the application of § 101 ("Guidance"). *See* USPTO's 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019) ("Memorandum"); USPTO October 2019 Update: Subject Matter Eligibility (Oct. 17, 2019) ("Update"), noticed at 84 Fed. Reg. 55942 (Oct. 18, 2019). Pursuant to the Guidance "Step 2A," the office first looks to whether the claim recites:

(1) Prong One: any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity such as a fundamental economic practice, or mental processes); and

(2) Prong Two: additional elements that integrate the judicial exception into a practical application (*see* MPEP § 2106.05(a)–(c), (e)–(h)).

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, does the Office then (pursuant to the Guidance "Step 2B") look to whether the claim:

(3) adds a specific limitation beyond the judicial exception that are not "well-understood, routine, conventional" in the field (*see* MPEP § 2106.05(d)); or

(4) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.

See Memorandum Section III.

We are not persuaded the Examiner's rejection is in error.

1. Step 2A

Regarding Step 2A, Prong One, Appellant argues that "[t]he claims in this application do not fall within any of the three categories [enumerated in the Guidelines] and there is no director justification on record in this case." Reply Br. 2. Further, Appellant contends that "[t]he claims are not directed to merely a fundamental economic principal as the claimed invention provides a new data structure that defines a more useful index." Reply Br. 3.

Regarding Step 2A, Prong Two, Appellant argues "[t]he claims in this application are clearly integrated into a practical application," because "the claims improve the operation and applicability of a computer." Reply Br. 5, citing Spec. ¶¶ 13, 20, 21. Appellant contends that "[t]he result of the claims is clearly a useful data structure that is integrated into a practical application." Reply Br. 5.

Prong One

Pursuant to Step 2A, Prong One of the Guidance, we are not persuaded the Examiner erred in determining claims 1–15 recite an abstract idea. *See* Final Act. 9–10; Ans. 4; Memorandum Section III(A)(1) (Prong One: Evaluate Whether the Claim Recites a Judicial Exception), 84 Fed. Reg. at 54. We first note claim 1's preamble recites "manipulating a plurality of data sets to generate a final data set, the final data set comprising

data representing an index." We find that, when analyzing claim 1 under the Guidance, claim 1 recites:

(1) "mathematical concepts" (including "mathematical calculations"); and

(2) "certain methods of organizing human activity—fundamental economic principles or practices" (including "mitigating risk").

Memorandum, 84 Fed. Reg. at 52.

Particularly, claim 1's steps recite mathematical terms and operations, such as "estimating the volatility of an equity price," "calculating a default probability based on the estimated volatility," and "calculating an index level using the calculated default probability." The Specification supports this finding. It states that "[t]ypical models considered in embodiments of the present invention are the Constant Elasticity of Variance (CEV) model, the Jump to default Constant Elasticity of Variance (JCEV) model and also more complex Stochastic Volatility Models" (Spec. ¶ 26; *see also* Spec. ¶¶ 27–32), in which particularly "the CEV model aims to calculate a cumulative default probability of a company over a given time period." Spec. ¶ 32. The Specification further affirms the calculated index's mathematical nature, stating that the "final index construction can represent a default likelihood, a credit spread, ***or some other mathematical measures*** related to the equity and credit markets." Spec. ¶ 13 (emphasis added).

Further, the claimed "default probability being a probability that the equity becomes worthless over a defined time horizon" functions as a risk mitigation indicator, as investors, speculators, and regulators would consider such a default probability as an estimated risk indicator tied to losses incurred should the corresponding equity default. The Specification supports this this finding, with regard to the calculated index value,

suggesting the index may represent "a gauge for both tail risk in the equity market as well as default risk in credit markets over a given time horizon." Spec. ¶ 12. An investor, speculator, or regulator would similarly consider the index as an indicator or tool for mitigating risk.

These steps recite abstract ideas because they accomplish both performing "mathematical calculations" and "fundamental economic principles and practices." Memorandum Section I, 84 Fed. Reg. at 52. Thus, this claim recites both "[m]athematical concepts" and "[c]ertain methods of organizing human activity." *Id.*

Appellant's argument that because "the claimed inventions provides a new data structure that defines a more useful index," the "claims are not ***directed*** to merely a fundamental economic principal" (Reply Br. 3, emphasis added) does not negate that the claims ***recite*** a judicial exception. Appellant's argument regarding a new data structure is considered below under Prong 2.

Accordingly, claim 1 "recites a judicial exception . . . [and] requires further analysis in Prong Two" of the Guidance. Memorandum, 84 Fed. Reg. at 54.

Prong Two

We also are not persuaded the Examiner erred pursuant to Step 2A, Prong Two of the Guidance. In addition to the claim features that are part of the judicial exception discussed above under Prong One, the remaining claim features are part of the abstract idea and do not comprise additional elements, individually or in combination, that integrate the exception into a practical application. *See* Memorandum, 84 Fed. Reg. at 54–55; *SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1170 (Fed. Cir. 2018) (The abstract

idea itself cannot supply the inventive concept, "no matter how groundbreaking the advance."). That is, claim 1 further recites steps of "determining the first data set," "using the first data set to generate the second data set," "using the second data set to generate the third data set," and "using the third data set to generate the final data set." Even considered as additional elements, these limitations "merely recite[] the words 'apply it' (or an equivalent) with the judicial exception, or merely include[] instructions to implement an abstract idea . . . on a computer, or merely uses use[] a computer as a tool to perform an abstract idea." Memorandum, 84 Fed. Reg. at 55; *see also Smart Sys. Innovations, LLC v. Chicago Transit Auth.*, 873 F.3d at 1372–73 (Fed. Cir. 2017) (Determining the claims "invoke computers in the collection and arrangement of data. Claims with such character do not escape the abstract idea exception."). This is not enough to integrate the underlying abstract idea into a practical application. *See* Memorandum, 84 Fed. Reg. at 55.

Appellant's argument that "[t]he claims in this application are clearly integrated into a practical application," because "the claims improve the operation and applicability of a computer" (Reply Br. 5) is unsupported by the disclosure's recited benefits afforded by the abstract idea and unrelated to computer operation. Appellant has not shown the claims include additional elements that improve the underlying computer, or other technology. *See Intellectual Ventures I LLC v. Capital One Bank (USA)*, 792 F.3d 1363, 1370 (Fed. Cir. 2015) ("[M]erely adding computer functionality to increase the speed or efficiency of the process does not confer patent eligibility on an otherwise abstract idea."); *cf. Trading Techs. Int'l, Inc. v. IBG LLC*, No. 2017-2257, 2019 WL 1716242, at *3 (Fed. Cir.

2019) ("This invention makes the *trader* faster and more efficient, not the computer. This is not a technical solution to a technical problem.").

Appellant's argument that "[t]he result of the claims is clearly a useful data structure that is integrated into a practical application" (Reply Br. 5) is not supported by the disclosure or other evidence on the record before us. Appellant's disclosure does not explicitly recite a "data structure" but does recite a "first data set," "second data set," and "third data set," but no description regarding any particular structure is provided. The disclosure further recites "a final data set comprising index data." Spec. ¶ 33. Other mentions of "index data" in the disclosure (*see* Spec. ¶¶ 13, 15) do not support Appellant's argument that any type of "data structure" results from the claimed method. Rather, the index appears to be a single value that may have a "level" (Spec. ¶ 68) or represent "an equally weighted average." Spec. ¶ 69. Nothing in the disclosure or the claims indicate that one or more of the "first data set," "second data set," "third data set," and "final data set" possess unique properties that amount to significantly more than the abstract idea. Further, Appellant's claim 1 does not "improve the functioning of the computer itself" or "any other technology or technical field." *Alice*, 573 U.S. at 225.

Accordingly, we determine independent claim 1 does not integrate the judicial exception into a practical application. *See* Memorandum, 84 Fed. Reg. at 54. Because the "claim recites a judicial exception and fails to integrate the exception into a practical application" (*id.* at 51), "the claim is directed to the judicial exception" (*id.* at 54).

2. Step 2B

Appellant has not shown the recited additional elements (or combination of elements) amount to significantly more than the judicial exception itself. *See* Final Act. 10–13; Ans. 6–11; Memorandum, Section III(B) (Step 2B), 84 Fed. Reg. at 56. The Examiner finds, and we agree, that "[w]hen viewed individually, or as an ordered combination, the additional limitations do not amount to a claim as a whole that is significantly more than the abstract idea." Final Act. 12. The Examiner further finds, and we agree, that "the disclosure recites general computer products [that] are suitable to perform the claimed method" (Ans. 10, citing ¶ 93, Fig. 2), and that

> the generic application of the computing devices [recited in claim 1] similarly does not make the invention patent-eligible. The use of these computing devices is merely what computers do, and does not change the analysis.

Final Act. 12; *see also Alice*, 573 U.S. at 226. Based on the record before us, we agree with the Examiner that the claimed additional elements and combination of elements, when considered both individually and as an ordered combination, do not amount to significantly more than the abstract idea, but instead recite only generic components and steps that are well-understood, routine, and conventional.

Accordingly, we agree with the Examiner that independent claim 1 is patent ineligible. We conclude the same for independent claims 14 and 15, and all dependent claims.

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–15	101	Eligibility	1–15	

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED