United States Tax Court

164 T.C. No. 9

FACEBOOK, INC. & SUBSIDIARIES,
Petitioner

v.

COMMISSIONER OF INTERNAL REVENUE,
Respondent

Docket No. 21959-16.[1] Filed May 22, 2025.

On September 15, 2010, P entered into a cost sharing arrangement (CSA) under Temp. Treas. Reg. § 1.482-7T with S, its Irish subsidiary. The CSA required P and S to engage in a platform contribution transaction (PCT), compensating each other for the value of any "platform contributions" made. *See* Temp. Treas. Reg. § 1.482-7T(a)(2), (b)(1)(ii), (c)(1). Pursuant to the PCT, P and S granted each other the right to use any existing online platform technology in their respective territories: the United States and Canada for P and the rest of the world (ROW territory) for S. In a separate agreement, P granted S all rights relating to P's existing users, advertisers, and third-party application developers in the ROW territory, including their data. P also granted S the right to use its marketing intangibles in the ROW territory. S made payments to P for 2010 on the basis of P's valuation of these agreements at a September 2010 net present value (NPV) of $6.3 billion.

In addition to a PCT payment to compensate P for its upfront PCT contributions, S also was required by the regulations to make (and commit to making annually) cost

[1] Petitioner has a related case at Docket No. 12738-18 in which tax years 2011 and 2013 are at issue.

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sharing transaction (CST) payments to compensate P for ongoing intangible development costs (IDCs) in proportion to its share of reasonably anticipated benefits (RAB share) from exploiting cost shared intangibles. *See id.* para. (b)(1)(i). S made a CST payment for 2010.

R's valuation expert selected the income method as the best method for valuing contributions to the CSA, *see id.* para. (g)(4), and opined that the NPV of the assets P contributed to the CSA was $19.945 billion. Because this valuation increased S's required PCT payment, R made a PCT allocation for 2010. R also increased S's RAB share used to determine S's CST payment for 2010.

P contends that the income method cannot apply because both P and S made "nonroutine platform contributions." *See id.* subdiv. (i)(D). P also argues that R selected the wrong values for three key inputs to the income method: revenue projections for the ROW territory, the appropriate discount rate for those projected revenues, and S's best realistic alternative to cost sharing. P argues that once those inputs are corrected, R's income method produces a result consistent with P's valuation. *See* Treas. Reg. § 1.482-1(e). P simultaneously maintains that the income method cannot be the best method because it cannot produce an arm's-length result and that the regulations are invalid because they limit the expected return on IDCs to a discount rate reflecting market-correlated risks. P also challenges R's adjustments to P's and S's RAB shares.

1. *Held*: Only one CSA participant—P—made a nonroutine platform contribution and therefore the income method in Temp. Treas. Reg. § 1.482-7T(g)(4) can apply.

2. *Held, further*, R implemented the income method unreasonably, by selecting the wrong inputs, and therefore abused his discretion under I.R.C. § 482 by reallocating income to P with respect to the PCT payment to the extent of the wrong inputs.

3. *Held, further*, with reliable inputs, the income method is the best method and produces an arm's-length PCT payment value.

4. *Held, further*, Temp. Treas. Reg. § 1.482-7T reasonably implements I.R.C. § 482 and is not invalid.

5. *Held, further*, Temp. Treas. Reg. § 1.482-7T(i)(6) does not operate as a safe harbor and therefore does not preclude R from making a PCT allocation under paragraph (i)(3).

6. *Held, further*, R did not abuse his discretion under I.R.C. § 482 by adjusting P's and S's RAB shares to determine the required CST payment.

7. *Held, further*, R's method for calculating RAB shares is consistent with Temp. Treas. Reg. § 1.482-7T and provides the most reliable estimate of reasonably anticipated benefits, using corrected inputs.

Andrew P. Crousore, *Scott H. Frewing*, *Mark A. Oates*, *Susan E. Ryba*, *George M. Clarke III*, *Mark T. Roche*, *Robert C. Hammill*, *Cameron C. Reilly*, *Courtland L. Roberts*, *Amanda T. Kottke*, *Julia T. Chiao*, *Yea-Jin A. Chang*, *Parisa Manteghi Griess*, *Ashley H. Zepeda*, *Eric M. Biscopink*, *Don Crawford*, *Gregory G. Garre*, *Miriam Louise Fisher*, *Melissa A. Sherry*, *Eric J. Konopka*, *Shannon C. Fiedler*, *Robert S. Walton*, and *Ronald Gee Ming Dong*, for petitioner.

Justin L. Campolieta, *Michael S. Coravos*, *Ronald S. Collins, Jr.*, *Victor W. Zhao*, *Laurie A. Humphreys*, *Timothy L. Smith*, *Eli Hoory*, *Christine S. Irwin*, *Elizabeth C. Turnbull*, *John M. Altman*, *Kathryn F. Patterson*, *Richard L. Wooldridge*, *Travis Vance*, *Henry C. Bonney*, *Huong T. Bailie*, *Katelynn M. Winkler*, and *Meenu Kapai*, for respondent.

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PUGH, *Judge*: The Internal Revenue Service (IRS or respondent) determined a deficiency in petitioner's federal income tax for 2010 in a Notice of Deficiency dated July 26, 2016 (Notice). This deficiency arose because respondent reallocated income between petitioner's domestic and foreign affiliates under section 482[2] in connection with intercompany agreements they entered into, effective September 15,

[2] Unless otherwise indicated, statutory references are to the Internal Revenue Code, Title 26 U.S.C., in effect at all relevant times, regulation references are to the *Code of Federal Regulations*, Title 26 (Treas. Reg.), in effect at all relevant times, and Rule references are to the Tax Court Rules of Practice and Procedure. We round monetary amounts and percentages as appropriate.

2010 (transaction date).[3] Effective that date, Facebook, Inc. (Facebook US),[4] entered into a cost sharing arrangement (CSA) and two related license agreements with its Irish subsidiary, Facebook Ireland Holdings Unlimited (FIH).[5] We refer to FIH and its wholly owned Irish subsidiary, Facebook Ireland Limited (FIL), together as "Facebook Ireland." We refer to Facebook, Inc., and subsidiaries together as Facebook or petitioner, and the CSA and associated licenses as the "transaction." Petitioner timely challenged respondent's determination.

We begin, as we always must, with the statute. Section 482 in effect for 2010 provides in full:

> In any case of two or more organizations, trades, or businesses (whether or not incorporated, whether or not organized in the United States, and whether or not affiliated) owned or controlled directly or indirectly by the same interests, the Secretary may distribute, apportion, or allocate gross income, deductions, credits, or allowances between or among such organizations, trades, or businesses, if he determines that such distribution, apportionment, or allocation is necessary in order to prevent evasion of taxes or clearly to reflect the income of any of such organizations, trades, or businesses. In the case of any transfer (or license) of intangible property (within the meaning of section 936(h)(3)(B)), the income with respect to such transfer or license shall be commensurate with the income attributable to the intangible.

The regulations promulgated under section 482 authorize commonly controlled entities to enter into a CSA.[6] Facebook US and Facebook Ireland entered into the CSA pursuant to the cost sharing regulations in effect for 2010. *See* Temp. Treas. Reg. § 1.482-7T. We refer

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[3] Because of the number of defined terms and acronyms we must use, we have included in Appendix B a glossary to aid the reader.

[4] Facebook US originally was incorporated under the name "TheFacebook, Inc." It later changed its name to "Meta Platforms, Inc." We use "Facebook" to refer to the worldwide affiliated group, to be consistent with the trial record.

[5] The CSA was executed on November 12, 2010.

[6] The regulations under section 482 commonly are referred to as the "transfer pricing regulations." Section -7 of the transfer pricing regulations commonly is referred to as the "cost sharing regulations."

to these regulations as the "2009 cost sharing regulations."[7] This is the first time we apply them.[8]

In a CSA, controlled (i.e., related) participants commit to bear the ongoing costs of developing certain intangibles in proportion to their respective shares of reasonably anticipated benefits from exploiting those cost shared intangibles (RAB shares). Temp. Treas. Reg. § 1.482-7T(a)(1), (b)(1)(i). By bearing its RAB share of the ongoing intangible development costs (IDCs) going forward, a controlled participant in a CSA comes to own, in its designated territory, the "cost shared intangibles" that it helps develop through that shared funding. *Id.* para. (b)(1)(iii), (4)(i). In addition to the annual "cost sharing transaction" payments (CST Payments) during the CSA, controlled participants must compensate each other for the value of any upfront noncash contributions in proportion to their RAB shares. *Id.* paras. (a)(2), (b)(1)(ii). The 2009 cost sharing regulations label the upfront transaction in which CSA participants make contributions a "platform contribution transaction" (PCT), the noncash contribution a "platform contribution," and the payment for the upfront noncash contribution a "PCT Payment." *See id.* paras. (a)(2), (b)(1)(ii), (c)(1).

In the CSA, Facebook US and Facebook Ireland agreed to codevelop future versions of the hardware and software systems underlying Facebook's Online Platform (FOP technology).[9] They divided

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[7] The 2009 cost sharing regulations were effective January 5, 2009, as temporary regulations. *See* T.D. 9441, 74 Fed. Reg. 340 (Jan. 5, 2009), 2009-7 I.R.B. 460. Initially proposed in 2005, *see* Prop. Treas. Reg. § 1.482-7, 70 Fed. Reg. 51,116 (Aug. 29, 2005), they were made final effective December 16, 2011, *see* T.D. 9568, 76 Fed. Reg. 80,082 (Dec. 22, 2011), 2012-12 I.R.B. 499.

[8] The 2009 cost sharing regulations replaced the 1995 cost sharing regulations and redesignated them Treasury Regulation § 1.482-7A (Treas. Reg.). *See* 74 Fed. Reg. 352. The 1995 cost sharing regulations were at issue in *Amazon.com, Inc. & Subs. v. Commissioner* (*Amazon I*), 148 T.C. 108 (2017), *aff'd*, *Amazon.com, Inc. & Subs. v. Commissioner* (*Amazon II*), 934 F.3d 976 (9th Cir. 2019), and *Veritas Software Corp. & Subs. v. Commissioner*, 133 T.C. 297 (2009). The 2009 cost sharing regulations replaced the term "buy-in payment" (in Treas. Reg. § 1.482-7A(g)) used in those cases with "PCT Payment."

[9] As in many cases we must use, and take care using, terminology. For example, the term "platform" has four meanings in this case that we must keep distinct in our discussion:

all interests in the cost shared intangibles into two nonoverlapping geographical territories; the U.S. and Canada (domestic territory) was assigned to Facebook US, and the rest of the world (ROW territory) was assigned to Facebook Ireland. *See id.* para. (b)(1)(iii), (4)(i). Facebook Ireland also committed to bear its RAB share of IDCs through CST Payments.

In connection with the CSA, Facebook US and Facebook Ireland licensed to each other their existing rights in the FOP technology for use in their respective territories. Additionally, Facebook US licensed to Facebook Ireland the rights associated with Facebook US's existing user, advertiser, and developer relationships (user community rights) and its marketing intangibles, including trademarks, in the ROW territory.

The transfer pricing documentation provided that Facebook Ireland would make contingent annual payments to Facebook US (over a period of years) for the existing FOP technology, user community rights, and marketing intangibles that Facebook US contributed to the CSA. The documentation used the value of Facebook US's upfront contributions as the starting point for computing the contingent annual payments made by Facebook Ireland. The Petition challenges the adjustment respondent made in the Notice to the total contingent annual payments Facebook Ireland made for 2010 (calling them gross royalties).[10]

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(1) the 2009 cost sharing regulations' definition of assets contributed to a CSA—"platform contributions"—that must be compensated through a PCT, *see* Temp. Treas. Reg. § 1.482-7T(c)(1);

(2) the technology stack that Facebook operates—the "FOP technology" for purposes of our analysis—that enables communication by users, advertising by advertisers, and software application (app) development by third-party app developers, which was transferred in connection with and was to be developed further under the CSA;

(3) an economic description of a business—a "platform business"—that facilitates interactions between or among participants and often exhibits network effects; and

(4) the product name—"Facebook Platform" (capital P)—for Facebook's set of application programing interfaces (APIs) that allows third-party developers to build apps and offer them to Facebook users.

[10] Respondent does not challenge the form of payment (contingent and annual) adopted in the transfer pricing documentation.

The parties use various terms to refer to the value of Facebook US's upfront contributions and Facebook Ireland's contingent annual payments computed on the basis of that value. Petitioner sometimes refers to the value of the "PCT and other intangibles" and also "PCT and royalty." Respondent often uses the defined term in the regulations, "PCT Payment." Consistent with the regulations, we adopt the term PCT Payment to mean the value of Facebook US's upfront contributions to the CSA, which in turn is the value to be used for computing the amount of the contingent annual payments owed by Facebook Ireland for 2010 and subsequent years. This PCT Payment value is the main dispute between the parties that we must resolve. Facebook used an estimated net present value (NPV) of $6.3 billion.[11] Respondent contends that the NPV is $19.945 billion.

The parties disagree over the best method for valuing the PCT Payment under the 2009 cost sharing regulations. *See* Temp. Treas. Reg. § 1.482-7T(g). The parties also disagree over the inputs to be used in whatever method we adopt.[12] Respondent's transfer pricing valuation expert, T. Scott Newlon,[13] selected the income method in paragraph (g)(4) as the best method. Petitioner argues that the income method is not appropriate and urges us to adopt an unspecified method under paragraph (g)(8) offered by its primary valuation expert, Sanjay Unni. Dr. Unni's unspecified method is an amalgam of the income method and a method he derived from cases applying prior regulations. Petitioner also offers an alternative valuation by another of its valuation experts, Timothy Reichert, using the residual profit split method (RPSM) in paragraph (g)(7). Petitioner also contends that Dr. Newlon used the

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[11] Although petitioner states that the NPV was $6.3 billion, the transfer pricing documentation did not include a total (it listed a percentage for the marketing intangibles, not a value). Respondent's Notice stated that Facebook determined an NPV of $6.7 billion. We need not resolve this curious discrepancy as the initial valuation Facebook used does not affect our ultimate holding, but to avoid confusion we will use the $6.3 billion figure.

[12] A third issue involves the interaction between the provisions in the 2009 cost sharing regulations governing respondent's adjustments to the value of the PCT Payment, under Temporary Treasury Regulation § 1.482-7T(i)(3) (Temp. Treas. Reg.), and the rules governing periodic adjustments that respondent adopted to implement the commensurate with income standard of section 482, in paragraph (i)(6). Petitioner argues that these rules provide an implicit safe harbor protecting it from respondent's proposed adjustments under paragraph (i)(3).

[13] Appendix A to this Opinion includes thumbnail sketches of the experts who testified in this case. We discuss their testimony only to the extent it is relevant to our analysis.

wrong values for three key inputs needed for the income method (and Dr. Unni's unspecified method): revenue projections for the ROW territory, the appropriate discount rate for those projected revenues, and Facebook Ireland's best realistic alternative to cost sharing. These are the key factual disputes we must resolve. At the same time, petitioner argues that the income method and the other methods specified in the 2009 cost sharing regulations are invalid insofar as they mandate valuation methods that do not produce an arm's-length result. We take up petitioner's three challenges (to Dr. Newlon's method, Dr. Newlon's key inputs, and the regulations themselves) in turn.

The parties also disagree over how to estimate Facebook Ireland's RAB shares for purposes of computing its CST Payments. Petitioner reported an RAB share of 44% for Facebook Ireland for 2010;[14] respondent contends that it should be 53.5%. We therefore must determine how to estimate Facebook Ireland's RAB shares as well.

In deciding these issues, our focus is on what was reasonably anticipated as of the transaction date. Unless otherwise specified, the facts we find are as of the transaction date. To put the valuation inputs used by the experts into context and to evaluate their reliability we will go back further in time. We do not need to dwell on Facebook's origins. But we do need to understand its business model, products, and international growth leading up to the transaction.

FINDINGS OF FACT

Some of the facts have been stipulated and are so found. Facebook US is the U.S. parent of a group of affiliated corporations that joined in the filing of a consolidated federal income tax return for 2010. Incorporated in Delaware in 2004, Facebook US maintains its principal place of business in Menlo Park, California.[15] Facebook operates an online social networking platform and makes money primarily by selling advertisements shown to its users.[16]

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[14] For simplicity we use the RAB share identified in petitioner's posttrial brief but note that the Petition stated that the percentage reported was 43%.

[15] Absent stipulation to the contrary, this case is appealable to the U.S. Court of Appeals for the Ninth Circuit. *See* § 7482(b)(1)(B).

[16] The Court issued protective orders adopting procedures to protect certain confidential information, including trade secrets and proprietary technology, during the pretrial, trial, and posttrial phases of this case. We have determined that the facts

As of the transaction date, Facebook was a privately held, venture capital (VC)-backed company. It received funding by issuing stock to private investors in financing rounds that took place in 2004, 2005, 2007, and 2009. It completed an initial public offering (IPO) of its common stock in May 2012. Before the IPO, its stock could be traded on secondary markets only.

Facebook formed its first international entity, an advertising sales office, in the United Kingdom in August 2007. This was its only foreign subsidiary as of June 2008 when it started considering locations for its international headquarters. In October 2008 Facebook announced that it planned to open its international headquarters in Dublin, Ireland. Among other reasons—including access to a talented labor force and proximity to markets it wanted to develop—it chose Ireland to help reduce its global effective tax rate.

FIL was incorporated as an Irish corporation resident in Ireland in October 2008. FIH was incorporated as an Irish corporation with a registered address in Ireland and its stated place of management and control in the Cayman Islands in January 2009. FIH was a holding company and did not have any employees. As noted above, we refer to FIH and FIL together as Facebook Ireland. Both were wholly owned subsidiaries of Facebook US, with FIH wholly owning FIL. Facebook first capitalized FIH with a $10 million contribution in August 2009, made an additional contribution of nearly $4 million later in 2009, and another, of $20 million, in August 2010. Effective September 1, 2010, FIL elected to be treated as a disregarded entity for U.S. federal income tax purposes pursuant to Treas. Reg. § 301.7701-3, after which it no longer was a separate entity for U.S. federal income tax purposes.

In December 2009 Facebook US and Facebook Ireland executed a series of intercompany agreements (2009 Agreements), in which Facebook Ireland obligated itself to perform certain functions, and certain market development expenses were allocated to it by Facebook US.

Although Facebook Ireland had nearly 200 employees by the transaction date, it lacked the financial and accounting systems necessary to record third-party revenue before September 1, 2010. Facebook US therefore booked all revenue before the transaction.

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we find in this Opinion do not constitute confidential information warranting protection.

Facebook Ireland did not record any intangible property leading up to the transaction; it recorded only cash and intercompany receivables.

Facebook Ireland established the necessary financial and accounting systems on September 1, 2010 (the day FIL elected disregarded entity status), that allowed it to begin recording revenue. Two weeks later, in connection with the CSA, the ROW territory became Facebook Ireland's territory and Facebook Ireland began funding its RAB share of the IDCs.

The main factual disagreements between the parties relate to their valuation experts' choices of valuation methods and key valuation inputs. To evaluate Facebook's revenue projections, we need to understand its idiosyncratic business opportunities and risks. To select an appropriate discount rate for those projected revenues, we need to consider the market-correlated risks for similar companies. And to determine Facebook Ireland's best realistic alternative to cost sharing, we need to understand the role of Facebook's ad sales team and compare it to the third-party ad resellers (Resellers) and advertising agencies used by the valuation experts as comparables. Finally, Facebook's pre-CSA international activities and the 2009 Agreements are relevant to the parties' dispute over what each controlled participant brought to the CSA, which in turn dictates which valuation method is appropriate and how it applies.

I. *Facebook's social networking platform*

Facebook's stated mission is[17] to "[g]ive people the power to share and make the world more open and connected." Its technology enables individuals to create a user profile (Profile), through which they can share information, establish connections with other users (friends),[18] communicate with those users, and view and post content. It also enables businesses and other organizations to create public profiles (Pages). Its third-party developer platform, Facebook Platform, allows developers to integrate their apps into the site and interact with users.

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[17] We generally use the present tense for factual descriptions that are not specific to a time period and the past tense for facts that are specific to a particular period; however, our findings are as of the transaction date unless we otherwise specify.

[18] It has become common to use the noun "friend" as a verb, abandoning the previously useful verb "befriend"; thus at trial witnesses referred to befriending someone on Facebook as "friending."

Facebook collects data on its users. It collects demographic data (age, gender, location, interests, etc.) as well as contextual data (how users interact with content on its site). Facebook's goal in collecting this data is to map digitally the "social graph." The social graph is a conceptual representation of the real-world connections between people and their friends and interests. Facebook uses this data in developing and improving products, and targeting ads for users.

Facebook's business strategy is first to grow, retain, and engage users on its site and then to monetize them (that is, earn revenue). Facebook measures its success in each part of this strategy with different metrics. For user growth and engagement, it generally uses monthly active users (MAUs) and daily active users (DAUs).[19] To measure its ability to monetize the users, it uses average revenue per user (ARPU).

Facebook operates a platform business because it facilitates interactions between, and among, users, advertisers, and app developers. Platform businesses often exhibit network effects. Network effects are positive when the value of the platform to one user is enhanced by the presence of other users of the platform. Positive network effects can accelerate the growth of a platform. Negative network effects can accelerate the decline of a platform.

Facebook was exhibiting positive network effects as of the transaction date. These positive network effects provided a "tailwind" for user growth and gave Facebook a competitive advantage. Facebook's positive network effects did not insulate it from competition, however, because users could switch to another platform or use multiple platforms at once. We now turn to a description of the platform business and participants, along with the tailwinds, then address the perceived headwinds (the market risks and challenges) as of the transaction date.

A. *Users*

Leading up to the transaction date, Facebook was succeeding on the first part of its business strategy, growing an engaged user community. Users grew rapidly after Mark Zuckerberg launched

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[19] MAUs reflect the number of people who have logged in and visited the Facebook site, or have taken an action to share content or activities with their connections through integrated third-party websites in the last 30 days of the date of measurement. DAUs are measured the same way as MAUs but look to activity in the last 24 hours of the date of measurement.

Facebook in February 2004. Initially restricted to students at a few colleges, by the end of 2006 registration was open to anyone with a valid email address who was at least 13 years old. By the transaction date, Facebook had over 500 million global MAUs. Approximately 384 million MAUs were located outside the United States and Canada (growing from 94 million in January 2009).

1. *Product development*

Facebook's user growth reflects the popularity of its core user products, launched early in its history. Profile, launched in 2004, enables users to create an online identity. Photos, launched in 2005, allows users to upload and share photos and to "tag" the people shown in them. News Feed, launched in 2006, is the user "landing page" and displays content including user stories, photos, videos, and status updates from friends, groups, and followed Pages.

Facebook's products are developed, maintained, and improved by its software engineers, often using user data to inform their work. In addition to observing user behavior as they develop products, Facebook's engineers sometimes build products that solicit user input. For example, in late 2007 and early 2008, Facebook translated the site's user interface elements into different languages. Facebook's engineers accomplished this by developing a translation tool that used crowdsourced responses about how to translate. Through this translation tool, users could submit translations of words from Facebook's user interface into other languages and rank (vote on) translations submitted by other users.

Like any consumer data, Facebook's user data can be used to identify problems and opportunities, but in isolation does not provide technical solutions or designs for a new or improved product. User data are inputs Facebook uses to build products and make decisions.

2. *User growth*

Facebook understood that two of its biggest levers for user growth were its scalable products and network of users. Facebook aimed for its user products to be "scalable" (that is, expand automatically to fit demand as demand grows). Its site was, for the most part, a uniform global product that could scale anywhere it was not blocked. Facebook also understood the importance of "product-market fit" (i.e., having a product that people find valuable and want to continue using). From 2008 through 2010, a cross-functional group of employees, the "Growth Team," focused on building a scalable product to grow users.

One product that the Growth Team used to grow users was People You May Know (PYMK). PYMK recommended potential new friends to Facebook users. It relied on user data, including the user's existing friends, demographic data, and prior interactions with PYMK. Facebook saw PYMK as its number one lever for growth. "Contact importer" technology enabled users to transfer their contacts from email and instant messaging services into their Facebook accounts, which PYMK then used to recommend other users to "friend."

Facebook also used scalable technologies (e.g., Groups, Pages, and Facebook Platform) to provide content to users specific to their location. Through these technologies, users could create groups for local events, local businesses and organizations could communicate with users, and developers could create apps that appealed to local users. Many users' friends were local, and their News Feed content was inherently local because it was personalized to them. This product-driven "scalable localization" was more cost efficient than nonscalable "custom localization." In a few markets (such as Japan) Facebook needed, and devoted resources including local employees to provide, a more localized approach.

3. *User operations and privacy*

As the number of users grew, so too did the need for a user operations team that could moderate the content users posted and provide technical support. As Facebook collected user data, the need for, and importance of, a data controller that could comply with any country- and region-specific regulations also grew. So too did the need to address data privacy concerns.

B. *Monetization*

Leading up to the transaction date, Facebook also made strides on the second part of its business strategy: monetization. Facebook monetized its users primarily by displaying targeted ads to them on its site. It also generated non-ad revenue by charging a fee when users redeemed its virtual currency, Facebook Credits (Credits), on an app using the Facebook Platform. In 2010 Facebook generated 95% of its revenue (approximately $1.9 billion) from selling online digital advertising.[20] Credits accounted for the other 5% of Facebook's 2010

[20] By contrast, offline, or traditional, advertising includes print (newspaper, direct mail, magazines), broadcast (television, radio), and outdoor (billboards).

revenue. We go through Facebook's ad sales team functions in some detail for two reasons. First, ad revenue made up the bulk of the projected revenue that the valuation experts used to value the PCT Payment. Second, the experts disputed the appropriate comparable for this function (as Facebook Ireland's hypothetical "best realistic alternative") when applying the income method.

Facebook's ad sales team was divided into a Direct Sales Organization (DSO), Inside Sales Organization (ISO), and Online Sales Operations Organization (OSO). The DSO provided high-touch services to the largest advertisers. The ISO serviced mid-tier (small- and mid-size) business advertisers with a "lighter touch" than the DSO. ISO representatives generally engaged with clients through emails, phone calls, and video conferences, with occasional marketing trips to meet in person. The OSO mainly provided customer support services to advertisers that used Facebook's "self-service" ad platform, called Ads Manager.

1. *Digital advertising*

Early on, Facebook's ad sales team sold ads through insertion orders (IOs). An IO is a contract, signed by an advertiser and Facebook, that specifies the details of the advertiser's campaign. The DSO sold IOs to large brand advertisers.

Generally, IOs are used for ad "impressions" (the times an ad is shown to a user), specifying the number to be purchased. To place an IO, the advertiser typically must spend above a minimum threshold and is guaranteed the number of ad impressions it purchases. Ad impressions generally are associated with brand advertising—ads used to promote awareness of a brand.[21]

a. *Ads Manager*

In 2007 Facebook launched two products that transformed its advertising business. One, Facebook Pages, allowed organizations and businesses to create Profiles and engage with users, who could become "fans" of their Pages. The other, Ads Manager, was an online platform that allowed prospective advertisers to purchase and manage ad campaigns on Facebook without having to interact with a salesperson; for this reason it also was referred to as the "self-service" ad platform.

[21] Digital ads also could be priced on a "cost per click" basis; most of the ads sold through Ads Manager were priced on that basis.

Ads Manager did not require an advertiser to spend a minimum amount and did not require an IO. It was priced through an online auction system.

Ads Manager made advertising on Facebook more accessible globally. Any advertiser anywhere in the world with an internet connection (where Facebook was not blocked) could use Ads Manager to run an ad campaign on the site. Advertisers who were managed by Facebook's ad sales team could and did use Ads Manager. And advertisers could run ad campaigns using Ads Manager without ever interacting with a Facebook salesperson. Ads Manager also made advertising on Facebook accessible to small and mid-sized businesses who would not meet the minimum threshold for purchasing ads through IOs.

Ads Manger made Facebook's advertising business more efficient. First, advertisers using Ads Manager required less sales and marketing support. Before it was launched, a Facebook employee had to communicate with prospective advertisers about whether they wanted to run an ad campaign. After it was launched, Facebook could promote Ads Manager in its own internet-based marketing, including on-site merchandising (i.e., marketing on its own site), search engine marketing, search engine optimization (e.g., ensuring Facebook was listed as a top search result on search engine sites), email marketing, and paid ads on other websites. And advertisers could use those links to place ads on their own.

Ads Manager advertisers also generally required less operational support from Facebook's ad sales team. Before it was launched, a Facebook employee had to execute an IO reflecting the terms of an ad campaign. After it was launched, advertisers could select and adjust the terms of their ad campaigns on Ads Manager. Facebook's ad sales team could focus on helping them manage and optimize their accounts and addressing any issues they had. These services helped Facebook retain advertisers and reduce churn.

The ISO steered advertisers towards Ads Manager and the OSO supported advertisers using Ads Manager through the Ticket Processing System, an email-based response support system, as well as through one-to-many support systems, such as webinars and FAQ.

Some advertisers were not managed by a member of Facebook's ad sales team at any point in their advertising lifecycle. Revenue from

these advertisers was assigned to the OSO. In the third quarter of 2010, 29% of Facebook's total ad revenue was completely unmanaged.

From 2008 through 2010 revenue from Ads Manager increased relative to total ad revenue, growing from 35.3% ($96 million) of Facebook's total ad revenue in 2008, to 45.5% ($353.8 million) in 2009, to 66.9% ($1.253 billion) in 2010.[22] As of the transaction date, Facebook expected the percentage of revenue from Ads Manager to continue growing. It anticipated that all ads eventually would be purchased on Ads Manager because its auction pricing system provided a marketplace with fair prices.

From January through September 2010 Facebook's approximately $1.2 billion in ad revenues was distributed across the DSO, ISO, and OSO, and between Ads Manager and IOs as follows:

Organization	*Revenue (millions) and percentage of total ad revenue*	*Percentage of revenue from Ads Manager*	*Percentage of revenue from IOs*
DSO	$464.3 (38%)	20%	80%
ISO	212.2 (18%)	90%	10%
OSO	532.0 (44%)	100%	0%

In the third quarter of 2010, 71% ($329 million) of Facebook's total ad revenue was from managed accounts. These were the advertisers that had at any point been assigned a dedicated account manager from the DSO, ISO, or OSO. The "managed revenue" included purchases via Ads Manager ($187 million) and by IOs ($142 million). The advertisers that accounted for the managed revenue received varying levels of support depending upon how actively they were managed. The following chart summarizes "Facebook ad revenue by purchase tool and sales and marketing involvement" in the third quarter of 2010:[23]

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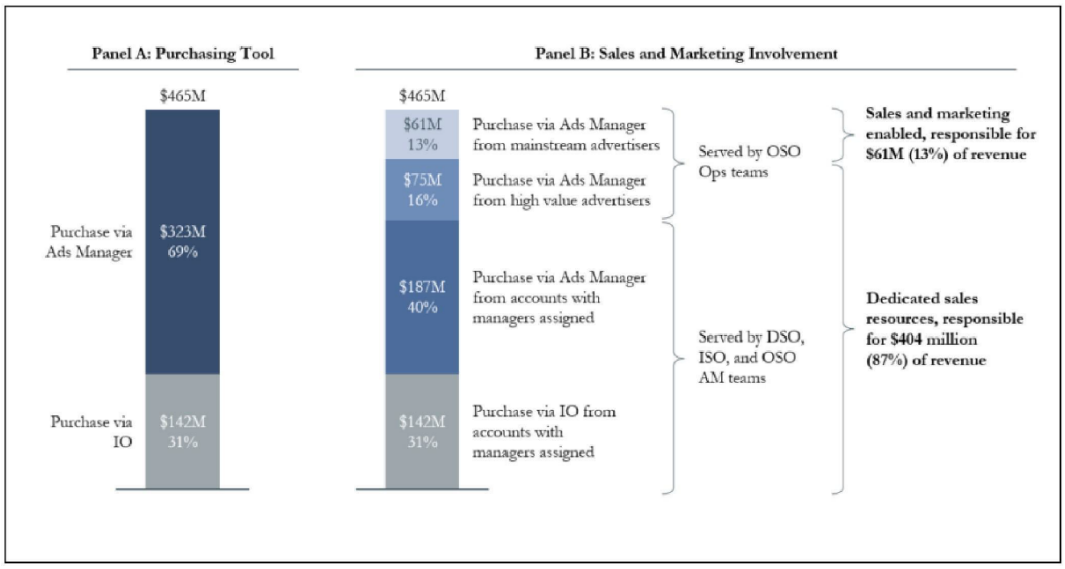
[22] It is unclear from the record whether this computation of total ad revenue includes revenue from Resellers; we assume it does not for purposes of our analysis and note that the small Reseller volume would not affect the numbers materially.

[23] Anja Lambrecht, one of petitioner's experts, included the chart in her rebuttal.



b. *International playbook*

Facebook had an "international playbook" for selling and marketing ads in the ROW territory, summarized in a September 2010 presentation titled "International Sales Prioritization." The international playbook took a "market coverage approach." It assigned one of four levels of sales coverage to a country by considering whether that country met certain criteria. The table below, from a slide titled "International Playbook - Minimum Target Criteria," details the four coverage levels and associated criteria.

	FB Penetration	FB Active Users	FB Self-Service Revenue	FB SS ARPU	Size of Online Ad Market
In Country Office	40%	3MM	$4MM	$2.00	$500MM
Served from Regional Hub	35%	2MM	$2MM	$1.00	$200MM
Reseller/ISO	25%	1MM	$1MM	$0.25	$25MM
No Coverage	<25%	<1MM	<$1MM	<$0.25	<$25MM

These criteria—the ratio of MAUs to total internet users within a country, the number of active users, the amount of revenue generated from Ads Manager, ARPU, and the size of the online ad market—reflect how monetizable Facebook projected a given market to be. More monetizable markets received greater coverage, and therefore a greater commitment of resources from Facebook's ad sales team.

i. *Ad sales team*

By the transaction date, Facebook had nine international sales offices located in highly monetizable markets, where it wanted its ad sales team physically located in the markets of the advertisers and ad agencies with whom they worked: London (Facebook UK), Paris (Facebook France), Milan (Facebook Italy), Hamburg (Facebook Germany), Madrid (Facebook Spain), Stockholm (Facebook Sweden), Sydney (Facebook Australia), Auckland (Facebook New Zealand), and Singapore (Facebook Singapore).[24] These offices were staffed by members of Facebook's DSO. We refer to these offices collectively as the "FB Foreign Sales Affiliates."

The DSO provided ad sales and account management services for the largest advertisers in the international markets, as in the domestic ad market. In countries that met the criteria for the second-highest monetization level, Facebook's ad sales team serviced advertisers through a nearby office functioning as a regional hub. Before the transaction date, for example, Facebook Sweden employees covered Norway, Denmark, and Finland, and Facebook Germany employees covered Switzerland and Austria.

As for the remaining markets that did not warrant coverage from an in-country team or from a regional hub, Facebook used both the ISO and the OSO to provide customer service support. Facebook Ireland "housed" the international members of the ISO and OSO ad sales teams.

ii. *Resellers*

In the lower priority markets, Facebook also contracted with Resellers to "resell" ads. Its general goal was that after two or three years of coverage by a Reseller, a market would be ready to graduate to coverage by a regional hub. An in-country office required more resources than a regional hub, which in turn required more resources than contracting with a Reseller.

Facebook entered into Network Affiliate Agreements (NAAs) with Resellers.[25] Resellers took a revenue-based commission specified by the

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[24] The record is unclear as to whether the Auckland, New Zealand, office was open as of the transaction date.

[25] The NAAs predating the transaction were between Resellers and "Facebook, Inc., a Delaware corporation." They were assigned to Facebook Ireland as part of the

applicable NAA. NAAs covered the following countries (with specific commissions noted in parentheses): South Africa, Nigeria, Kenya, and Ghana (30%); Czech Republic (20%); Poland (20%); Saudia Arabia, United Arab Emirates, Bahrain, Oman, Qatar, Kuwait, Yemen, Lebanon, Jordan, Egypt, Tunisia, and Morocco (30%); Mexico, Central America, South America, and the Caribbean (30%); Singapore, Malaysia, Indonesia, Taiwan, Philippines, Thailand, Vietnam, South Korea, Japan, Cambodia, Myanmar, East Timor, Brunei, and Laos (25% originally, 30% as amended); and Israel (30%).

In 2010 Facebook's ARPU in the Resellers' countries ranged from $0.03 to $0.73, with a median ARPU of $0.10. By comparison, its ARPU for all international markets was $2.38. Resellers were limited to selling in their designated markets. Under some NAAs, Facebook reserved the right to remove countries from a Reseller's "territory" upon written notice. Under others, Facebook and the Reseller could agree to add countries to the Reseller's territory.

Resellers had to deliver to Facebook an executed IO that was subject to Facebook's prior review and approval. Additionally, each IO had to meet a monthly minimum sales threshold unless Facebook approved an exception in writing. These thresholds ranged from $4,350 to $10,000 in net monthly sales. Resellers could make these IO sales only to a select group of advertisers, a dedicated list controlled by Facebook. The Resellers' limited sales role reflects the third-tier status of their markets in Facebook's international playbook.

Under the NAAs, Facebook was not restricted from selling ads in the Resellers' markets. It could, and did, cover these markets concurrently with Ads Manager, serviced by the ISO and the OSO, reflecting Ads Manager's global accessibility. Facebook paid Resellers a commission only for sales made through IOs. Facebook did not compensate Resellers for any of the ads sold through Ads Manager even if the Resellers were involved in the sales.

The NAAs varied in duration, but they generally were short term (one year) and could be terminated by either party for any or no reason upon 30 days' prior written notice. This reflected the Resellers' temporary role in Facebook's expansion in international markets.

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transaction. The Assignment Agreement was undated, but we assume it was signed around the same time as the CSA (on November 12, 2010). The NAAs have different effective dates, but those details are not relevant to our analysis.

Reseller activities accounted for less than 3% of Facebook's 2010 total ad revenue in the ROW territory.[26]

c. *Advertising agencies*

Advertising agencies also purchase ads for advertisers, working as intermediaries between the media owner (here, Facebook) and advertisers. They work with the advertiser to plan the proper advertisement, channel, and budget. Facebook built long-term relationships with global advertising agencies. It preferred working with large agencies because they matched its scale.

2. *Nonadvertising revenue*

Facebook generated almost all of its non-ad revenue (approximately 5% of total revenue) from a 30% fee on redemptions of Credits. "Credits" refers to Facebook's virtual currency that allowed Facebook users to use a single form of payment across apps on Facebook Platform.

Launched in May 2007, Facebook Platform, is a collection of external APIs and tools that enable third-party developers to develop apps that link to and operate with or within the Facebook site. Developer apps accessible through Facebook Platform contributed to user engagement on Facebook. Some of the most popular developer apps on Facebook were for social games, such as FarmVille and Tiki Resort (depicted below).

[26] Petitioner's valuation expert, Dr. Unni, estimated the amount to be $22 million (2.7%) and respondent's internet advertising expert, Ian Maude, estimated it to be $21 million (2.6%). Either way it was a small fraction of the total revenue.

Facebook gave developers access to certain user data, and required developers to comply with the terms and conditions set forth in Facebook's Platform Policy. Facebook did not charge developers any fees for access to Facebook Platform.

Both Facebook and the developers could earn revenue by serving ads to Facebook Platform users. Facebook could display ads on the side bar, and developers could display ads on Facebook's framed Canvas page that shows the developers' content (the part that displays the game in the screenshot above).

Facebook also sought to monetize Facebook Platform through Credits. Users bought Credits from Facebook that they then could use to purchase virtual goods in-app. Facebook retained a 30% fee when a user paid with Credits. The third-party developer that created the app received the remaining 70%. Facebook settled on this revenue split after reviewing what competing platforms (e.g., the Google Play and Apple iTunes stores) charged. Facebook believed this familiar model was the simplest for developers to accept.

Facebook began rolling Credits out to certain developers' apps in May 2009, two years after it launched Facebook Platform. As of the transaction date, Credits were not available to all developers, and their use was not mandatory.

C. *Facebook's brand and other marketing intangibles*

Facebook expected its marketing intangibles, including its trademark and brand, to contribute to its growth. Facebook developed its brand around connecting and sharing, openness, and "authentic identity" (that users provide their real names and are who they say they are). Facebook's users and its marketing intangibles strengthened each other—users enhanced the brand and the brand contributed to Facebook's ability to attract more users.

Facebook's branding also extended to employee recruiting; there its brand championed aspects of working for Facebook, including hacking, innovation, and impact. In this context, "hacking" refers to an engineer's freedom to develop products and technology. Facebook showcased its distinct technical challenges and innovation capabilities by, for example, open sourcing its code (making it available to the public for free). Facebook emphasized that its engineers could make changes to the product soon after starting, and could have an impact (because of the comparatively small engineering team and large user base). Facebook anticipated that this recruitment brand would attract engineers.

D. *Business strategy challenges*

Notwithstanding its success growing and monetizing users, Facebook was worried that it would become a fad—that users might engage less on Facebook in favor of trendy new social or technological platforms. This was how Facebook displaced MySpace.com, a competing social networking site, around 2008 to 2009. Facebook faced competition from other social networking sites both in the United States and globally in growing its user base and keeping users engaged. It also faced competition for users' attention from traditional and online media. Facebook subscribed to the mantra that "only the paranoid survive." For example, Facebook held a "lockdown" in July 2010 to address the introduction of another social media product, Google+.

Facebook's ability to attract, retain, and serve its users depended upon the attractiveness and reliability of its products and the quality of their underlying technical infrastructure. The rapid pace of change in

technology forced Facebook to adapt to maintain and grow its user community and to keep users engaged.

During 2010 Facebook's user base grew rapidly from approximately 350 million to 600 million MAUs, causing scaling challenges. Storing and making use of exponentially expanding user data strained Facebook's software and hardware infrastructure, requiring it to innovate constantly. Facebook's global hardware and software infrastructure as of the transaction date were inadequate to support the number of MAUs it was projecting—its infrastructure would not be able to handle the increase in data from more users and the richer content they were sharing (such as videos).[27] Facebook knew its infrastructure would need to improve to support the growing number of users and to avoid disruptions in site performance.

Another opportunity for (and risk to) Facebook's achieving its user projections was the "platform shift" from desktop to mobile. At the time Facebook still was primarily a desktop destination. Facebook's 2010 mobile offerings included a text-only (no photos) site, a mobile browser site, and rudimentary web-based mobile apps. These offerings were popular with users; more than 190 million MAUs accessed Facebook through mobile products, including nearly 160 million MAUs in the ROW territory. But these mobile products provided significantly fewer features than its desktop product, and the diminished experience was not a viable long-term mobile solution to attract and retain users.

Developing an engaging mobile product would require Facebook to adapt its infrastructure, development process, and workforce. As of the transaction date, Facebook's infrastructure almost exclusively supported desktop services, and the existing developer tools and product release process did not facilitate mobile development. Most of Facebook's 574 engineers did not know mobile-specific programming languages such as Objective-C or Java.

Facebook's first attempt to build an engaging mobile app at scale, Faceweb, launched in fall 2010, failed. In late 2011 Facebook began hiring new engineers and retraining existing engineers to develop a native mobile product that did not depend on the desktop site. It finally launched true native mobile products in 2012.

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[27] The risk of managing growing demand is familiar. *See Amazon I*, 148 T.C. at 126–27 (noting need to increase scale was a driving factor in Amazon's need for technological innovation and discussing scale limitations of its technology).

Facebook also faced pressure to further develop artificial intelligence and machine learning (AI/ML) capabilities to curate content for users (including ads they would find engaging) and to protect users from spam or inappropriate content as the universe of potential content continued to expand. Facebook's AI/ML capabilities were insufficient to address the challenges it anticipated. The rise of rich media, such as photos and videos, heightened the challenges and risks. In the following years, Facebook rewrote or replaced much of the AI/ML technologies it possessed as of the transaction date.

As with users, Facebook's ability to attract, retain, and serve advertisers depended upon the attractiveness and reliability of the Facebook ad products and their underlying technical infrastructure. To achieve its ad revenue projections, Facebook anticipated that it would need to innovate its advertising technology.

Advertisers were intrigued by the size of Facebook's user community (its "reach") and its demographic data on those users (its ability to target people based on their authentic identity). But advertisers remained skeptical of the effectiveness of advertising on the Facebook site because social media was still new and because Facebook at the time lacked the ability to show advertisers the metric they cared most about: their return on investment (the money spent advertising on the site). At the time of the transaction, Facebook had not developed an effective ads conversion tracking tool that could follow users after they left the Facebook site to determine whether the ad shown to them induced the action desired by the advertiser.

In 2010 Facebook sold desktop advertising exclusively; it did not display ads on its mobile website or its then-existing mobile apps. Until Facebook started monetizing mobile users, it faced the risk that its mobile user growth would "cannibalize" its desktop revenue—that increasing unmonetized mobile use would consume its monetizable desktop business. To display mobile ads, Facebook also would need a place to put them. But the screen on mobile devices was smaller and Facebook's mobile site did not have a side bar, unlike the desktop site. That left News Feed as the only option. Facebook had tried ads in News Feed in 2006 through an ad product, Sponsored Stories, that it later abandoned. And with the shift to mobile, the ability to track users' activity after they left Facebook's site (or mobile app) could become more difficult and therefore posed an additional risk to Facebook's ad business.

II. *Pre-CSA agreements*

The fight over how to value the platform contributions hinges, in part, on what Facebook Ireland contributed to the CSA. We discuss next what Facebook Ireland was doing before the CSA. We then discuss the CSA and related agreements.

As of the transaction date, Facebook Ireland had 171 Dublin employees in the following cost centers:[28]

Cost center	*Employees*
User Operations	54
OSO	37
Advertising Operations	19
ISO	17
Finance	9
Risk Operations	8
Recruiting	6
Platform Ops	6
Other	15
Total	**171**

A. *2009 Agreements*

The 2009 Agreements included: the "Intangible Property License Agreement" (IPLA), the "Growth and Development Services Agreement" (GDSA), the "General and Administrative Services Agreement" (GASA), the "Expense Reimbursement Agreement" (ERA), and the "Sales Costs Reimbursement Agreement" (SCRA). FIH and FIL were parties to the

[28] These figures are petitioner's; respondent's opening brief stated that 329 people were employed by FIL or the FB Foreign Sales Affiliates. In any event, the precise numbers are not critical to our analysis.

ERA. The other 2009 Agreements were between FIH and Facebook US. The 2009 Agreements were executed in December 2009 but generally had a stated effective date in January 2009. Petitioner has not taken the position that it intended the 2009 Agreements to constitute a CSA. Nor did Facebook prepare transfer pricing documentation for any transactions between Facebook US and Facebook Ireland for tax year 2009. The 2009 Agreements called for various written reports to be prepared. None were. They terminated as of the transaction date.

Under the IPLA, Facebook US granted Facebook Ireland a nonexclusive license to use the Facebook System, Marks,[29] and Confidential Information (as those terms were defined) "to develop, promote, expand and maintain online social networking communities of users, advertisers and developers" outside the United States and Canada (the ROW territory).[30] The IPLA provided that Facebook US was "the owner, or authorized licensee, of all rights, title and interests in and to all of the Facebook System, Marks and . . . Confidential Information" and that Facebook Ireland "shall acquire no rights whatsoever" to the licensed rights "except as specifically provided" in the IPLA. With limited exceptions, immediately upon termination (which either party could do without cause upon 90 days' prior written notice), Facebook Ireland had to "cease all use of the Facebook System, Marks and . . . Confidential Information."

The IPLA stated that Facebook Ireland would pay Facebook US royalties of 25% of Facebook Ireland's net revenues. Facebook Ireland did not pay Facebook US any royalties pursuant to the IPLA. And because Facebook US recorded all revenue from international markets for the duration of the IPLA, Facebook Ireland did not owe royalties to Facebook US.

Through two other agreements—the GDSA and the GASA—Facebook US agreed to perform certain development and general and administrative (G&A) services for Facebook Ireland, for which Facebook Ireland agreed to reimburse Facebook US. Facebook US did not submit

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[29] The term "Marks" generally included trademarks, service marks, and trade names.

[30] Facebook generally used the term "international territory" for this; we will use ROW territory to avoid implying that the 2009 Agreements and the CSA covered different territories.

written reports or invoices to Facebook Ireland pursuant to the these agreements, or upon their termination.

B. *Sales and Marketing Service Agreements*

Under the Sales and Marketing Service Agreements (SMSAs), Facebook Ireland contracted with certain FB Foreign Sales Affiliates for their in-country ad sales services, agreeing to pay an 8% markup on costs. The FB Foreign Sales Affiliates with whom Facebook Ireland had SMSAs included: Facebook UK, Facebook Australia,[31] Facebook Sweden, Facebook Italy, Facebook Spain, Facebook Germany, and Facebook Singapore. Because before September 2010, Facebook Ireland lacked the accounting systems to book revenue, through a separate agreement, Facebook US agreed to bear the expense of paying the FB Foreign Sales Affiliates for their ad sales services.[32]

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[31] The Australian Tax Office (ATO) audited Facebook Australia for tax years 2009 through 2013. At issue was whether consideration received by Facebook Australia for providing certain sales, marketing, and other support services to related parties (Facebook US and Facebook Ireland) was arm's length. From May 1, 2009, to January 1, 2010, Facebook US compensated Facebook Australia at cost plus 10% for those services. From January 1, 2010, through the transaction date, Facebook Ireland compensated Facebook Australia on a cost-plus-8% basis. Facebook represented to the ATO "that a mark-up on costs of 8% is arm's length."

[32] Under the ERA between FIH and FIL, FIL and FIH intended that Facebook US would bear the "Direct Sales Expenses" related to current revenue generation by reimbursing FIL directly or indirectly (reimbursing FIH after it reimbursed FIL), and FIH would bear "Market Development Expenses" related to future revenue generation in the "Territory" (defined as the international market). To the extent that FIL's reimbursements under the SMSAs were Market Development Expenses, FIH agreed to bear those costs. The ERA defined Market Development Expenses as

> costs incurred by [FIL] in connection with activities performed by [FIL] or by an Affiliate related to market development of the Territory, including . . . marketing and demonstrating the Facebook website, advertising system, developer platform, community features and procedures; providing market and strategic analysis; and other similar activities which are intended to develop or support future revenues to advertisers . . . in the Territory.

Under the SCRA between Facebook US and FIH, Facebook US, in turn, agreed to reimburse FIH for the Direct Sales Expenses FIH was incurring (or rather, was being allocated). The SCRA defined Direct Sales Expenses as

> selling costs, including commissions paid to sales employees for advertising sales and that portion of commissions or fees paid to an Affiliate, which are incurred by [FIH] but which are directly allocable

C. *Statement of Rights and Responsibilities*

Before the transaction date, Facebook had in place terms and policies that governed its relationship with users, advertisers, and developers; by early 2009, these were contained in Facebook's Statement of Rights and Responsibilities (SRR). The SRR included by reference Facebook's Platform Policies, which applied to developers, and Facebook's Advertising Guidelines, which applied to advertisers. For a time, the SRR also included by reference Facebook's Privacy Policy; the Privacy Policy later became a stand-alone document. Every person who registered for and used Facebook agreed to comply with its terms and policies. As of August 2010, the agreement was with Facebook US if the user was in the United States or Canada, and with Facebook Ireland if the user was in the ROW territory.

D. *Octazen acquisition*

In February 2010 Facebook acquired Octazen Solutions (Octazen). Octazen had developed technology that could import contacts from various email domains (Octazen technology). Acquiring the Octazen technology (and the engineers who developed it) significantly improved Facebook's contact importing capabilities. Facebook US acquired Octazen through a stock purchase, by its U.S. subsidiary Facebook Global Holdings II, LLC, of Bonus Energy Sdn Bhd (the company that owned Octazen in February 2010) for $375,000 and three milestone payments in the future.[33]

In February 2010 Facebook US recorded an intangible asset purchase for $375,000 under the description "Octazen acquisition."[34] Facebook Ireland had not recorded any entries on its books and records relating to the Octazen acquisition as of the transaction date. In December 2010 FIL and Facebook Malaysia executed two agreements with a March 2010 effective date (approximately six months before FIL elected disregarded entity status in September 2010). In one, Facebook

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> to the external gross revenue derived from advertising sales to advertisers with invoicing or billing addresses in the Territory which is recognized by [Facebook US].

[33] In June 2010 Bonus Energy Sdn Bhd changed its name to Facebook Malaysia Sdn Bhd (Facebook Malaysia).

[34] The financial accounting experts, Michelle Hanlon (for respondent) and Robert Wentland (for petitioner), both noted issues with this entry, namely, that it reflects an asset purchase rather than a stock purchase and it does not say to whom the $375,000 cash was paid.

Malaysia agreed to assign rights in intangible property to FIL. In the other, FIL retained Facebook Malaysia as an intangible property developer. Accounting entries for FIL and Facebook Malaysia dated December 31, 2010, appear intended to record these agreements, but on that same date the recorded entries were then reversed. In October 2011 FIL recorded the Octazen intangible property for financial accounting purposes.[35]

III. *CSA agreements*

A. *The CSA*

The CSA was embodied in the "Agreement to Share Costs and Risks of Online Platform Intangible Property Development." Under the CSA, Facebook US and Facebook Ireland agreed to share IDCs in proportion to their respective RAB shares.[36] They divided all interest in cost shared intangibles into two nonoverlapping territories—Facebook US's domestic territory and Facebook Ireland's ROW territory—and assigned the perpetual and exclusive right to exploit the cost shared intangibles accordingly.[37]

Cost shared intangibles were defined to include the following intangible property reasonably anticipated to be developed under the CSA: "[i]mprovements, updates, adaptations, or other modifications to, or a complete replacement of, the [FOP technology]," and related intangible property.[38] The FOP technology was defined, in part, as

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[35] Facebook Malaysia was still named Bonus Energy Sdn Bhd as of the March 2010 effective date. It changed its name three months later, in June 2010. Thus, it was named Facebook Malaysia as of the December 2010 execution date.

[36] *See* Temp. Treas. Reg. § 1.482-7T(b) ("A cost sharing arrangement is an arrangement by which controlled participants share the costs and risks of developing cost shared intangibles in proportion to their RAB shares.").

[37] *See id.* subparas. (1)(iii) ("Each controlled participant must receive a non-overlapping interest in the cost shared intangibles without further obligation to compensate another controlled participant for such interest."), (4)(ii) (permitting and providing method for territory-based divisional interests).

[38] *See id.* paras. (j)(1)(i) ("*Cost shared intangible* means any intangible, within the meaning of § 1.482-4(b), that is developed by the IDA, including any portion of such intangible that reflects a platform contribution."), (k)(1)(ii)(B) (requiring a CSA to "[d]escribe the scope of the IDA to be undertaken and each reasonably anticipated cost shared intangible or class of reasonably anticipated cost shared intangibles").

> the hardware and software system, . . . in existence on [the transaction date], . . . that facilitates the sharing of data between users for social networking purposes, sales of credits and virtual items, development of applications by developers, delivery of targeted advertisements to user pages, and any related processes or technology that relates to facilitating communication and social networking among users and serving advertisements.

The CSA's definition of cost shared intangibles explicitly excluded the user community rights and marketing intangibles transferred in the "User Base Transfer and Marketing Intangibles License Agreement" (UBMI license).

The CSA specified the functions and risks that Facebook US and Facebook Ireland would undertake in their respective territories.[39] In connection with the CSA, Facebook Ireland would pay its RAB share of IDCs for each year by making CST Payments, and would bear the risk associated with making those payments.

Facebook US and Facebook Ireland committed to share "Aggregate Allocable IDCs." The Aggregate Allocable IDCs did not include "Territory Specific IDCs," which were individually borne by a participant and pertained solely to the territory that participant exploited. The CSA provided a method for calculating RAB shares for purposes of sharing the Aggregate Allocable IDCs. RAB shares were measured by "the ratio of the [NPV] of the aggregate gross profit of [one p]arty divided by the [NPV] of the aggregate total gross profit of both [p]arties." In this context, the gross profit amounts were the gross profits in the current fiscal year plus projected gross profits for the following two fiscal years.[40]

Facebook US and Facebook Ireland agreed to "review the actual and projected financial data" from the use of the cost shared intangibles "[f]rom time to time." They also agreed to "amend the cost sharing methodology as necessary on a prospective basis to reflect changes in"

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[39] *See id.* para. (k)(1)(ii)(C) (requiring a CSA to "[s]pecify the functions and risks that each controlled participant will undertake in connection with the CSA").

[40] *See id.* subdiv. (ii)(E) (requiring a CSA to "[p]rovide a method to calculate the controlled participants' RAB shares, based on factors that can reasonably be expected to reflect the participants' shares of anticipated benefits, and require that such RAB shares must be updated, as described in paragraph (e)(1) of this section").

their RAB shares "and/or the reliability of the measure provided [under the CSA] as the most reliable estimate of those benefits."

Facebook Ireland agreed to perform certain functions in the ROW territory, including to: "develop and manage the user, application developer, and advertiser communities"; "perform marketing activities"; "perform administrative functions such as facilities management, information services activities, human resource management, and tax and legal department activities"; "perform all operational functions that enable and maintain the performance of" the FOP technology, including ad operations, user operations, support, and user growth and optimization; "select, hire, and supervise employees . . . to perform" these functions; and "operate or manage data centers as necessary."

Facebook Ireland also agreed to bear risks in the ROW territory, including: "[m]arket risks"; "[l]egal and regulatory risks associated with operating an on-line business"; "[i]ntellectual property protection risks and . . . infringement risks"; "[b]usiness risks relating to [the ROW territory] including . . . credit risk, collections risk, market risk, and asset risks"; and "[r]isk associated with political unrest and foreign exchange rate fluctuation."

The CSA had an initial term of five years. It automatically renewed for successive one-year terms thereafter unless terminated.

B. *FOP technology license and UBMI license*

In connection with the CSA, Facebook US and Facebook Ireland concurrently entered into two additional agreements that conveyed resources or rights to Facebook Ireland: the "Online Platform Intangible Property Buy-In License Agreement" (FOP technology license)[41] and the UBMI license.

In the FOP technology license, Facebook US granted Facebook Ireland the existing rights to the FOP technology through an exclusive, perpetual, irrevocable license in the ROW territory. Specifically, it licensed to Facebook Ireland the "Facebook US PCT Property," defined as "all Intangible Property [(as defined in Treas. Reg. § 1.482-4(b), excluding the user community rights and marketing intangibles)], including computer software, relating to the [FOP technology] existing

[41] *See id.* para. (b)(3) ("The controlled participants must enter into a PCT as of the earliest date on or after the CSA is entered into on which a platform contribution is reasonably anticipated to contribute to developing cost shared intangibles.").

and owned or licensed by Facebook US," in the ROW territory as of the transaction date. Facebook Ireland then could develop the FOP technology as part of the CSA and otherwise use and exploit it commercially, "in particular by providing services to users, application developers, and advertisers located in" the ROW territory. The FOP technology license also required that Facebook Ireland transfer to Facebook US any "Facebook Ireland PCT Property" (defined the same way as Facebook US PCT Property, but belonging to Facebook Ireland).

As consideration for the rights and licenses granted to it under the FOP technology license, Facebook Ireland agreed to pay Facebook US "such arm's length amounts as required by Treas. Reg. § 1.482-4 and Temp. Treas. Reg. § 1.482-7T" in the form of contingent annual payments. Those payments were to be net of any amount due from Facebook US to Facebook Ireland relating to the Facebook Ireland PCT Property.

In the UBMI license, Facebook US granted to Facebook Ireland the rights to the existing Facebook "User Base" and "Marketing Intangibles" in the ROW territory. User Base was defined as "the contracts and other relationships with persons comprising the various user communities developed and maintained by the [p]arties, information about such users, and networks developed by users on the various Facebook sites." "User communities" here appears to refer to the user, advertiser, and developer communities together. We use the term "user community rights" to distinguish the rights covered by the UBMI from "users" or the "user base" (which frequently appeared to mean only the individuals using the site to connect and share, not the advertisers or developers). Marketing Intangibles were defined as

> trademarks, service marks, trade names, trade dress, domain names, business marks, designs, packaging, marketing strategies, customer lists, other marketing information, registrations, pending registrations and copyrights to logos or pictorial depictions, any intangible property associated with any such marks (such as marketing intangibles and brand name quality control standards), and other similar marketing intangible property.

(We similarly adopt the term "marketing intangibles.") Facebook US also "contribute[d] to Facebook Ireland all goodwill and going concern

value associated with the User Base and Marketing Intangibles" in the ROW territory.

As consideration for the user community rights and marketing intangibles licensed to Facebook Ireland under the UBMI license, Facebook Ireland agreed to pay Facebook US "such arm's length amounts as required by Treas. Reg. § 1.482-4" in the form of contingent annual payments.

In addition to the core agreements, the parties executed ancillary agreements, including a "Data Hosting Services Agreement" (DHSA), in which Facebook Ireland agreed to reimburse Facebook US for data hosting services at cost-plus-10%. We refer to all of the agreements executed as part of the transaction together as the "CSA agreements."

The parties also entered into an "Assignment Agreement" effective September 15, 2010, transferring Facebook US's rights and obligations under certain NAAs to Facebook Ireland.[42]

IV. *Financial projections*

Both parties' valuation experts value the upfront contributions to the CSA, and the PCT Payment required in exchange, by projecting relevant financial items (cashflow or operating income and expenses) for Facebook Ireland's ROW territory and then discounting them back to present value at a rate intended to reflect the market-correlated risks of participating in the CSA. But they dispute which inputs—including which financial projections and which discount rate—should be used. Both parties use Facebook's Long Range Plan (LRP), Facebook management's three-year-projections for September 2010 through the end of 2013, as a starting point for their financial projections. We too use the LRP as our starting point for evaluating Facebook's opportunities and risks as of the transaction date and the inputs the valuation experts chose.

A. *LRP financial projections*

The LRP is a 110-slide deck that Facebook management presented to its board of directors (Board) in August 2010. A slide titled

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[42] We assume the assignment is part of the transaction but do not group it with the CSA agreements. We note that an amendment to an NAA between Facebook US and one Reseller, Fox Latin American Channel, Inc., was executed (and made effective) after the transaction date but before the date the CSA was executed.

"3-Year Financial Plan: Why Do This?" listed the reasons for creating it: to "[i]dentify financial goals," "[p]rovide context to guide certain decisions (e.g. facilities needs, financing needs, hiring plans) and enable alignment across the company," and to "[o]btain Board feedback and identify areas for additional consideration." This slide also stated that Facebook sought to "[m]inimize resources invested in putting the plan together (primarily a top-down exercise)" and to "[r]espect [the] impossibility of predicting the future with anything resembling precision."

The LRP presented multiple financial scenarios, each with an associated set of financial projections. The parties dispute which set of projections contained in the LRP "reflect[s] the best estimates of the items projected (normally reflecting a probability weighted average of possible outcomes)" for 2010 through 2013. *See* Temp. Treas. Reg. § 1.482-7T(g)(2)(vi). They do not dispute how the projections divided revenue between the domestic and ROW territories.

Respondent, through Dr. Newlon, adopts the projections for the "Base Case" financial scenario. The Base Case projected revenue from Facebook's then-existing sources—digital advertising (Ads Revenue) and redemptions of Credits on Facebook Platform (Credits Revenue)—and from Other Revenue (revenue not attributed to a known source). For 2013, Ads Revenue and Credits Revenue amounted to approximately $8.1 billion and Other Revenue made up the remaining $1.9 billion, for a total of $10 billion. Other Revenue thus "plugged" the gap between the revenue Facebook projected from existing sources and the $10 billion total revenue forecast for 2013. Petitioner adopts the "Downside, Excl. 'Other' Revenue" financial scenario that, as its title indicates, excluded Other Revenue from projected revenue (this is the only way in which it differs from the Base Case).

Because we must decide which set of financial projections in the LRP should be used to estimate the value of the upfront contributions and the PCT Payment required to compensate for those contributions, we detail how the LRP was developed, how it reflected the opportunities and risks that Facebook perceived at the time, how Facebook used the Base Case internally, and how an investment bank treated the Base Case when conducting due diligence for a potential equity investment in Facebook.

1. *LRP development*

Facebook's finance team, led by its chief financial officer, David Ebersman, started working on the LRP in early 2010. It began by hosting a "hackathon" to brainstorm what the LRP would include. In the following months, members of Facebook's management team (referred to as the "M team") provided input on various items projected in the LRP, including users, revenue, and operating costs (namely, capital expenditures and headcount).

Susan Li, one of the finance team's analysts responsible for preparing revenue projections, developed a detailed forecast for 2011 through 2013. This involved projecting revenue from advertising, Credits, and an "other" category containing virtual gifts and other miscellaneous, de minimis revenue streams (amounting to approximately $13 million each year). The finance team strove to produce a 50/50 forecast, in which Facebook would exceed or miss the forecast equal parts of the time. As of June 2010 this bottoms-up forecast projected just over $8 billion in worldwide revenue for 2013. Facebook's chief operating officer, Sheryl Sandberg, expressed hesitancy over Facebook's ability meet these targets. In a June 2010 email exchange that included Mr. Ebersman, she stated: "My gut—and this is pure gut—tells me that our current trajectory is to hit $1.9 [billion] or less this year and then grow by 50% next year and less in 2012."

In mid-June 2010 Mr. Ebersman provided a draft of the LRP to Mr. Zuckerberg, Facebook's founder, chairman, chief executive officer, and controlling shareholder, in anticipation of meeting with him to discuss it. He told Mr. Zuckerberg that the plan was to build around the medium revenue case in the draft, which reflected the bottoms-up forecast of just over $8 billion in worldwide revenue in 2013.

Mr. Zuckerberg set the 2013 revenue forecast at $10 billion, instructing Facebook's finance team to add Other Revenue to the Base Case forecast to produce that number. Mr. Zuckerberg's decision to increase the 2013 revenue target was contentious internally. But Mr. Zuckerberg generally viewed Board meetings as an "open conversation"—an opportunity to discuss Facebook's biggest issues, both opportunities and challenges, even if he did not yet have a solution.

Mr. Zuckerberg understood that the finance team was forecasting how Facebook's existing products were going to perform. He also acknowledged that the finance team's revenue projections had been

accurate in the past and thought that their projection here may have been a little optimistic. Nonetheless, he thought that Facebook should perform better. He wanted to challenge the M team and other Facebook employees to do better. And he wanted to avoid the tendency to forecast just the things that existed. He believed Facebook "could create new things, and over a multi-year period, they could ramp up to be something meaningful" and ultimately deliver a better result.

Drafts of the LRP after Mr. Zuckerberg's mid-June 2010 input projected $10 billion in revenue in 2013 as a top-down estimate. In the breakout of revenue by segment, the "Other" category was increased from a de minimis revenue stream ($13 million in 2013) to an amount that represented the difference between the bottoms-up (approximately $8 billion) and top-down ($10 billion) forecasts. At least one of these drafts asked whether Facebook was "comfortable with a ~$2Bn 'tbd' plug for the 2013 revenue forecast?" and listed "$2bn 'other' revenue" as an item for followup.

In the final LRP presented to the Board in August 2010 the "Base Case" scenario included an Other Revenue "plug" amount of zero for 2011, approximately $100 million for 2012, and approximately $1.9 billion for 2013. The final LRP also retained questions about the $10 billion revenue forecast for 2013, as we detail below.

In addition to the Base Case, the final LRP included three other scenarios. The downside scenario labeled "Excl. 'Other' Revenue" simply excluded Other Revenue (as its label implies). It forecast $3.5 billion, $5.9 billion, and $8.1 billion for 2011, 2012, and 2013, respectively. The scenario labeled "Excl. 'Other' & Credits Rev." excluded both Other Revenue and Credits Revenue. The scenario labeled "Upside" adopted revenue figures of $5 billion, $10 billion, and $15 billion for 2011, 2012, and 2013, respectively.

2. *Key projections in the final LRP Base Case*

a. *User growth*

The LRP projected that Facebook's global MAUs would grow from 519 million in September 2010 to 600 million by the end of 2010, 834 million by 2011, 1.025 billion by 2012, and 1.195 billion by 2013. This reflected Facebook's strong position in the social media industry in 2010; it was the largest social network in the world. Overall Facebook was in a dominant position in its industry because it possessed the largest user community and its user community was rapidly growing. But the LRP

also identified risks to user growth and engagement including "[s]aturation points in key countries," "[d]ecreased engagement," and "[c]ompetition."

The LRP reflected Facebook's concern about user churn, which hurt user growth. Churned users were those who became "stale" (users whose last action was over 30 days ago) or "deactivated" (users who deactivated, but did not delete, their accounts). The LRP noted that, despite increasing user churn, Facebook added 30 million MAUs in July 2010 and mobile growth "reaccelerated." It stated that Facebook's team was "focused on reducing churn, better engaging new and low-activity users, and combatting fake accounts/spam across the site."

The LRP also mentioned the risks of site reliability, user discomfort with sharing personal information, and safety concerns as challenges to maintaining and growing its user base. To achieve its user growth projections in the LRP, Facebook anticipated that it would need to surmount various risks through innovations to the FOP technology.

The LRP made assumptions and projections regarding Facebook's users. It stated: "Mobile helps drives [sic] adoption around the world." It assumed that global internet growth would continue each year through 2013 to more than 2.5 billion users. And that the "plan ends 2013 with 1.2B users (compared to ~900M for Google and ~600M for Yahoo today)." It also "assume[d] average user engagement (ad opportunities per user) [would] stay[] relatively flat."

b. *Financial projections*

i. *Ads and Credits Revenue*

For 2013 the LRP projected revenue from two existing sources, Ads and Credits. Together, Ads Revenue and Credits Revenue were projected to grow from approximately $1.9 billion in 2010 to approximately $8.1 billion by 2013. Ads Revenue was projected by taking the product of the user projections and ARPU. It was projected to grow from approximately $1.8 billion in 2010 to approximately $6.7 billion in 2013, for a compound annual growth rate (CAGR) of 55%. The LRP projected Credits Revenue to grow from under $100 million in 2010 to approximately $1.4 billion in 2013, reflecting a CAGR of 148%. It also listed the ability to ramp up Credits Revenue at this rate as a risk.

The LRP indicated that Facebook's ads business would grow significantly. It stated that "[o]verall online ads spend should continue

to grow at a healthy pace." It noted that while Facebook then only accounted for "**3%** of online ad spend (vs. **~$50%** for Google and 15% for Y[ahoo]!)," it anticipated that by 2013 it would grow its share to 7%. The LRP stated that Facebook predicted its ads revenue growth would be driven in equal parts by user growth and ads ARPU growth. It also stated that in the future Facebook planned to monetize its mobile platform, framing the shift to mobile as a "key strategic area."

The LRP also listed "[a]dvertiser [return on investment], particularly in the direct response business" as a risk. The LRP noted that in monetization Facebook still lagged behind competitors, especially those in the search advertising business. It noted, as an example, that in August 2010, Facebook had roughly the same number of active users as Google and Yahoo! had had three years earlier, but Google and Yahoo! were three to six times more effective at monetizing them. And it included a slide titled "Churn analysis for advertisers" which highlighted increased net churn even as total accounts grew.

ii. *Other Revenue*

Other Revenue was the third source of revenue in the Base Case. The LRP framed the Other Revenue target as aspirational. "Achieve $10B in annual revenue in 2013" was listed as a "proposed financial goal[]." The first bullet point on the slide titled "Key questions for discussion" asked: "Are we comfortable planning towards a $10B business?" It noted that this would require "~$3B from Credits and Other sources" to supplement "~$7B in ads." Like the ability to ramp up Credits, the ability to ramp up Other Revenue was listed as a risk.

In describing the Base Case revenue forecast, the LRP stated that Other Revenue "reflects the expectation that we will identify additional revenue opportunities over the coming years" and that it "[c]ould come from expanding [Facebook's] existing Ads or Credits strategies and/or from new sources." "Begin considering ideas for $2B in 'other' revenue by 2013" was listed on the "[f]ollow-up items and next steps" slide.

These caveats were included because Mr. Ebersman wanted to ensure the Board understood that Other Revenue was a meaningful portion of the forecast for 2013 but Facebook did not have a plan for achieving it. Facebook had identified neither a product to generate Other Revenue nor a market in which it would earn Other Revenue. The need to explain these caveats was the most memorable part of the August 2010 presentation for Mr. Ebersman.

iii. *Discount rates*

The LRP offered discount rates of 12.5%, 15%, and 17.5% on slides titled "Illustrative valuation ranges ($ per share)," "DCF valuation comparison ($ per share)," and "Illustrative valuation range detail ($ per share)." It used these discount rates as part of its discounted cashflow (DCF) analysis in computing an estimate for the (then) current value of Facebook's stock. It listed Baidu, Tencent, and Google as comparables.

iv. *Projected expenses*

The two primary drivers of Facebook's projected expenses in the LRP were capital expenditures and employee headcount. The LRP projected that Facebook's capital expenditures would grow from $709 million in 2010 to $1.294 billion in 2013. It projected an increase in headcount from approximately 2,140 employees in 2010 to approximately 7,760 employees in 2013. The LRP also included among its key assumptions "M&A and Other Contingency" of $50 million, $250 million, and $750 million, for 2011 to 2013, respectively. A cashflow statement included these business acquisition expenses together with capital expenditures for purposes of computing cashflows from investing activities; neither was included in the computation of cashflows from operating activities.

Facebook did not associate material projected expenses with Other Revenue. The LRP stated that 2013 free cashflow "could be overstated if the 'other' revenue is not generated from Ads or Credits" because Facebook "ha[d] not aggressively planned for significant increased expenses (beyond ~250 heads) to support an entirely new revenue stream." Mr. Ebersman and the finance team thought that planning for expenses attributable to Other Revenue would be a more useful exercise once Facebook figured out what Other Revenue was going to be. Comparing the Base Case and the Downside Excluding Other Revenue indicates that the operating margin for Other Revenue would have been 94% (92% when accounting for the costs of 250 additional full-time employees).

3. *Internal use of the LRP*

Soon after Facebook's M team presented the LRP to the Board,[43] Facebook used it for internal decision-making purposes, and shared it with employees.

Facebook also provided the Base Case to an accounting firm, KPMG LLP (KPMG), to value its common stock for compensation purposes under section 409A. KPMG produced a section 409A valuation report for the third quarter of 2010 and for quarters thereafter. In these reports KPMG employed various valuation methods—DCF method, secondary market transaction method, guideline public company method—to establish the FMV of Facebook's common stock. In the section 409A valuation report for the quarter ending September 30, 2010, it employed a DCF method that incorporated the Base Case projections. KPMG viewed the Base Case projections as projecting significant growth that Facebook might not be able to realize. Accordingly, it added a "[c]ompany specific risk premium" of 6% to the discount rate it used to convert cashflows to present value, resulting in a weighted average cost of capital (WACC) of 17%.[44] It employed the secondary market transaction method as a corroboration method.

B. *Investment bank's equity investment*

In December 2010, Goldman Sachs (investment bank or bank) considered an investment in Facebook's common stock.[45] As part of its

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[43] It is unclear from the record whether formal Board approval was sought or required.

[44] "The WACC provides the expected rate of return for a company on the basis of the average portion of debt and equity in the company's capital structure, the current required return on equity (i.e., cost of equity), and the company's cost of debt." *Amazon I*, 148 T.C. at 184 n.35 (quoting *Veritas*, 133 T.C. at 324 n.33).

[45] At trial, the details of the bank's process for evaluating the prospective investment was sealed but its identity was not. The investments made by the bank, its affiliates, and its clients, through a vehicle the bank managed, in December 2010 and January 2011, significantly exceeded $1 billion. They were disclosed in the Form S–1, Registration Statement Under the Securities Act of 1933, for Facebook's IPO. We have concluded that the high-level details relevant to our analysis need not be sealed given the age of the transaction and what already is public.

We use the term "investment bank" to focus on what is relevant to the analysis: Roughly contemporaneously to the transaction, an unrelated potential investor evaluated an investment in Facebook for itself, and for its clients, on the basis of information provided by Facebook along with its own knowledge, experience, and expertise.

due diligence before making the investment, the bank met with members of the M team. It reviewed updated Base Case projections shared by Facebook, historical financials, and business strategy and prepared a confidential memorandum for its investment committee summarizing its analysis.[46] The investment bank conducted an analysis of its required returns for making an investment considering comparable companies and how those companies traded publicly, and contemplating Facebook's future earning potential at selected future points. The investment bank selected two points—early 2012 (assuming that an IPO was most likely in this timeframe) and late 2014. It anticipated that Facebook would be more comparable to some of its publicly traded peers at those future dates.

In its returns analysis the investment bank used Facebook's projections as a starting point to create its own base case. For its base case the investment bank reduced the revenue projections in Facebook's Base Case for each year: by $696 million (18.56%) in 2011, $1.667 billion (27.78%) in 2012, and $3.235 billion (32.35%) in 2013. The investment bank applied this haircut to Facebook's projected Base Case revenue for two reasons, explained at trial by a former vice president in the bank's technology, media, and telecom investment banking group, involved in evaluating the Facebook investment. First, the bank thought Facebook's projections for its current and identifiable revenue streams (Ads and Credits Revenue) were aggressive. It thought Facebook took an "optimistic" view of the Facebook Credits business and was generally "bullish" on the growth of its advertising business. Second, it was uncomfortable with Facebook's projections because there was no plan for generating Other Revenue. The investment bank therefore scaled back total revenue to produce a more "middle-of-the-road" case for which it would be willing to invest.

The bank concluded that an internal rate of return (IRR) in the range of the "high teens to mid-20s" was necessary for the risk it was taking by investing in Facebook in 2010. An IRR can generally be viewed as a "hurdle rate," or the return an investor aims to achieve. It used a

[46] Facebook's December 2010 presentation to the bank increased its revenue projections for 2011 to $3.75 billion to reflect increased ads revenue from Ads Manager but left the revenue projections for 2012 and 2013 unchanged.

20% discount rate to compute an NPV of $47B, as of December 2010, of Facebook's "[i]mplied" market cap in 2014 of $97B.[47]

C. *Financial results*

Facebook's actual revenue, as reported in its Forms 10–K, Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934, for subsequent years, was $3.711 billion for 2011, $5.089 billion for 2012, and $7.872 billion for 2013. The actual revenue thus exceeded the investment bank's projections but fell short of Facebook's LRP projections for 2012 and 2013, even after excluding Other Revenue in those years. Facebook's actual revenue did exceed the $10 billion in 2014; Facebook reported revenue of $12.466 billion for that year. This 58% revenue increase from 2013 to 2014 is slightly more than the 55% increase from 2012 to 2013.

The table below compares the revenue projections in the LRP Base Case, the LRP Downside Excluding Other Revenue, the investment bank's base case, and Facebook's actual revenue (expressed in billions).

Year	*LRP Base Case*	*LRP Downside Excluding Other Revenue*	*Investment bank's base case*	*Facebook's actual revenue*
2011	$3.5	$3.5	$3.054	$3.711
2012	6	5.9	4.333	5.089
2013	10	8.1	6.765	7.872

V. *Transfer pricing documentation and payments*

Facebook, with the help of Ernst & Young LLP (EY), prepared transfer pricing documentation for the transaction, which was finalized in September 2011.[48] This transfer pricing documentation consisted of

[47] Respondent points to other projections by the investment bank: a DCF analysis to arrive at an intrinsic equity value and a public companies comparables analysis to compute Facebook's average implied equity value.

[48] To prepare transfer pricing documentation, EY extended the 2010 LRP projections through 2020. EY projected operating margins to decrease by 0.5% each year after 2013 and determined a long-term growth rate of 3% for the terminal value of Facebook's expected future cashflows. The parties' valuation experts cited these assumptions in preparing their own analyses.

three separate reports: a CSA report, an intercompany PCT and license payments report, and an intercompany service transactions report.

For 2010 Facebook Ireland paid Facebook US (and Facebook US included in income) total royalties of roughly $100 million. This figure comprised approximately $60 million for the FOP technology, $38 million for the user community rights, and $3 million for the marketing intangibles. (The UBMI license did not specify separate royalties for the user community rights and the marketing intangibles; rather this appears to be the product of EY's transfer pricing analysis.) Of the $100 million, Facebook Ireland paid $5 million cash and a $95 million intercompany note. The royalty amounts were based on the following NPVs for each category (expressed in millions):

License	*NPV*
FOP technology	$1,685
User community rights	4,078
Marketing intangibles (1%)[49]	545
Total	**$6,308**

In preparing its valuation analysis for the required PCT Payment, EY included Other Revenue but used a lower operating margin based on the LRP Downside Excluding Other Revenue scenario. EY applied the income method to compute the NPV for the rights transferred by Facebook US to Facebook Ireland under the FOP technology license using a discount rate of 17.7%, which it derived by adding a 0.7% international risk premium to KPMG's 17% WACC for Facebook.

Facebook and EY concluded that Facebook Ireland would pay the FOP technology license royalties over four additional years (2011 through 2014), and royalties for user community rights over six additional years (2011 through 2016). Facebook Ireland made these

[49] The transfer pricing documentation prepared by EY states, in part, that "FIH has agreed to pay FBUS 1% of total international revenue for rights to the Facebook marketing intangibles under the User and Marketing IP Agreement, which is within the arm's length range of results from the CUT search described" in that documentation. We infer that EY's reference to the "User and Marketing IP Agreement" is to the UBMI license which it attached as an appendix. The UBMI license does not specify a 1% royalty for the marketing intangibles but broadly states that "Facebook Ireland shall pay to Facebook US such arm's length amounts as required by Treas. Reg. § 1.482-4."

payments. Facebook Ireland also was expected to pay the 1% trademark license royalty in perpetuity (and did pay it throughout the period covered by the record).[50]

EY concluded that Facebook Ireland's 2010 RAB share was 44% (and Facebook US's was therefore 56%). Following the method specified in the CSA, EY computed this percentage by dividing the NPV of current and projected gross profit in the ROW territory into worldwide gross profit. To compute the NPV it again used KPMG's estimated WACC of 17% for Facebook.

In 2010 Facebook's total cost sharing pool (i.e., the total amount of aggregate allocable IDCs paid by both Facebook US and Facebook Ireland) totaled approximately $49 million. Facebook Ireland bore its stated RAB share of these costs. After deducting some IDCs that it had directly incurred, Facebook Ireland made a net CST Payment to Facebook US of approximately $21 million for 2010.

In October 2013, during the IRS's examination for Facebook's 2010 tax year, Facebook responded to an information discovery request from the IRS broadly describing the Base Case projections in the LRP as "the most likely scenario to occur."

VI. *Respondent's allocations*

A. *Notice*

The Notice, issued in July 2016, reallocated income on the basis of respondent's determination that the NPV of the assets transferred—the FOP technology, user community rights, and marketing intangibles—and therefore the NPV of the PCT Payment was $13.88 billion, not the $6.3 billion that Facebook used for computing its 2010 royalties. This reallocation resulted in an increase of approximately $85 million in Facebook US's gross royalty income for 2010. The Notice did not separate the adjustment into the three royalties FIH paid Facebook US pursuant to EY's documentation.

The Notice also determined that Facebook Ireland's RAB share should be increased (and Facebook US's decreased) which in turn increased Facebook Ireland's required CST Payment and reduced

[50] It is unclear how Facebook Ireland made these payments (i.e., whether through a note or cash), but respondent does not dispute that Facebook Ireland paid some royalties or that it paid the 1% trademark license royalty.

Facebook US's by a corresponding amount. The Notice therefore decreased Facebook US's deductions for IDCs by $5.39 million for 2010.[51] Petitioner timely petitioned for redetermination.

B. *Amended Answer*

A month before trial respondent filed a First Amendment to Answer (Amended Answer),[52] increasing his asserted NPV for the PCT Payment from $13.88 billion to $21.15 billion, on the basis of Dr. Newlon's opening expert report. This assertion in turn increased petitioner's 2010 deficiency by approximately $2.4 million. The $21.15 billion NPV is the top of the range that Dr. Newlon opined would be arm's length in his opening expert report. In his posttrial opening brief respondent argues that a PCT Payment of $19.945 billion is appropriate.[53]

Respondent also has adopted Dr. Newlon's calculation of Facebook Ireland's RAB share for 2010 (53.5%), which is slightly lower than the RAB share respondent determined for Facebook Ireland in the Notice. This adjustment resulted in a decrease of $4.66 million (rather than the $5.39 million in the Notice) to Facebook US's deductions for IDCs for 2010, resulting in a reduced deficiency of $735,020 attributable to this item.

OPINION

Before we tackle the parties' legal arguments we address threshold evidentiary and procedural matters. We first address petitioner's contention that respondent raised a "new matter" under

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[51] This $13.88 billion NPV determination also resulted in collateral computational adjustments to Facebook's net operating loss, a domestic production activities deduction, and general business credits.

[52] Two months earlier, we gave respondent a deadline to move for leave to file an amended answer if he planned to seek an increased deficiency for 2010. This came after respondent indicated that he might be seeking an increased deficiency on the basis of what he "intend[ed] to present at trial." Respondent then filed a Motion for Leave to File First Amendment to Answer. In our Order granting respondent's Motion, we stated that we would allow petitioner to identify any prejudice during the course of trial and we deferred ruling on the effect of respondent's amendment on the burden of proof.

[53] Dr. Newlon presents this as the median result falling within a range from $18.757 billion to $21.147 billion that he determined under his method; respondent argues that a PCT Payment falling within Dr. Newlon's range is reasonable and chose the midpoint.

Rule 142(a), shifting the burden of proof to respondent. We then discuss the extent to which we will consider posttransaction evidence. Finally, we address the scope and standard of review under section 482.

I. *Burden of proof*

The taxpayer generally bears the burden of proving that the Commissioner's determinations in a Notice of Deficiency are erroneous. *See* Rule 142(a); *Welch v. Helvering*, 290 U.S. 111, 115 (1933). The Commissioner bears the burden of proof with respect to "any new matter, increases in deficiency, and affirmative defenses[] pleaded in the answer." Rule 142(a)(1). The Commissioner raises a new matter when "a notice of deficiency fails to describe the basis on which the Commissioner relies to support a deficiency determination and that basis requires the presentation of evidence that is different than that which would be necessary to resolve the determinations that were described in the notice of deficiency." *Shea v. Commissioner*, 112 T.C. 183, 197 (1999).

In his Amended Answer, respondent asserted an increased deficiency for 2010 on the basis of Dr. Newlon's opening expert report. The parties agree that respondent bears the burden of proof with respect to the increase. But petitioner contends that respondent's Amended Answer also raised a new matter and he therefore has the burden of proof as to the entire deficiency.

The Amended Answer did not change the statutory basis for respondent's (now-increased) deficiency determination. *See Abatti v. Commissioner*, 644 F.2d 1385, 1390 (9th Cir. 1981), *rev'g* T.C. Memo. 1978-392. In the Notice, respondent invoked section 482 to reallocate income in connection with the transaction. In his Amended Answer, he also relies on section 482, now reallocating a greater amount of income.

The main issues—the arm's-length PCT and CST Payments—remain the same. Respondent now supports his determination with a different valuation methodology. For reallocations under section 482, "[t]he fact that the Commissioner relies on alternative theories at trial, supported by methodology different from that used in the notice of deficiency, does not necessarily place the burden on the Commissioner." *Altama Delta Corp. v. Commissioner*, 104 T.C. 424, 458 (1995) (citing *Sundstrand Corp. & Subs. v. Commissioner*, 96 T.C. 226, 354–55 (1991)); *see also Stewart v. Commissioner*, 714 F.2d 977, 990 (9th Cir. 1983) ("It is well settled that the assertion of a new theory that merely

clarifies the original determination, without requiring the presentation of different evidence, does not shift the burden of proof." (citing *Achiro v. Commissioner*, 77 T.C. 881, 890 (1981))), *aff'g* T.C. Memo. 1982-209.

In a posttrial hearing we asked petitioner what different evidence it would have presented had respondent not amended his Answer. Petitioner confirmed that it would not have selected a different best method for estimating the arm's-length PCT Payment in its case-in-chief. Petitioner did note that its experts had to respond, on rebuttal, to a different method (Dr. Newlon's income method) that applied different inputs (financial projections, discount rate, best realistic alternative) from the method and inputs underlying the Notice. But a rebuttal expert report should respond to the other side's case-in-chief expert witness and the arguments made and evidence presented at trial by the other side through their expert(s).[54]

We have treated a party's reliance on new expert witness methodologies in a transfer pricing case as analogous to pursuing alternative legal theories. *See Altama Delta Corp.*, 104 T.C. at 458. Changes to expert witness methodologies do not "necessarily" shift the burden of proof to the Commissioner. *See id.* (ruling that the Commissioner's revisions at trial to the section 482 reallocations in the Notice of Deficiency did not warrant shifting the burden of proof). Raising a new statutory provision (e.g., dropping an economic substance challenge in favor of section 482), by contrast, would shift the burden of proof. *See Achiro*, 77 T.C. at 891. Here, petitioner had sufficient notice of the basis of respondent's deficiency determination (a section 482 reallocation in connection with the transaction). Shifting the burden of proof with respect to the entire deficiency therefore is inappropriate.

We conclude that petitioner retains the burden of proof for the deficiency determined in the Notice and respondent bears that burden for the increase to that amount in the Amended Answer. Regardless, the record before us allows us to resolve all issues on a preponderance of the evidence. The assignment of the burden of proof is not dispositive.

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[54] Respondent moved to exclude some of petitioner's rebuttal experts' reports as containing "untimely opening opinions." We denied respondent's Motion because the changes that petitioner's experts made to their valuation methodology and inputs directly or indirectly challenge respondent's opening expert reports on the same subject matter—generally, the arm's-length amount charged in a PCT.

II. *Posttransaction evidence*

In resolving the issues before us our focus is on the transaction date and what was "reasonably anticipated" as of that date. *See* Temp. Treas. Reg. § 1.482-7T(c)(1), (j)(1)(i) (defining compensable contributions by whether they are "reasonably anticipated to contribute to" either development of cost shared intangibles or exploitation of them).[55] For example, the regulations direct the parties to use financial projections that reflect a "probability weighted average of possible outcomes," and a discount rate that reflects "the market-correlated risks of activities or transactions . . . based on all the information potentially available at the time for which the present value calculation is to be performed." *Id.* para. (g)(2)(v) and (vi). Likewise, estimating RAB shares requires selecting reliable projections to measure the reasonably anticipated benefits. *Id.* para. (e)(1).

Evidence from after the transaction date can help us evaluate what was reasonably anticipated or expected then. To that extent, therefore, posttransaction evidence may be relevant. Fed. R. Evid. 401 and 402. We have looked to posttransaction evidence for this purpose in valuation cases. *See, e.g.*, *Estate of Gilford v. Commissioner*, 88 T.C. 38, 52 (1987) (permitting consideration of posttransaction date events "for the 'limited purpose' of establishing what the willing buyer and seller's expectations were on the valuation date and whether these expectations were 'reasonable and intelligent'" (quoting *Estate of Jephson v. Commissioner*, 81 T.C. 999, 1002 (1983))). We have considered posttransaction evidence for this purpose in prior cost sharing cases. *See Amazon I*, 148 T.C. at 168 (noting "ex post data" of a contract amendment that postdated the CSA transaction by 18 months "may provide a reference point or sanity check"); *Veritas*, 133 T.C. at 326–27 (comparing Veritas Ireland's actual growth rate with the growth rate employed by the Commissioner's valuation expert during a period following the tax years in issue and looking to its role in the international markets during the CSA).

Throughout the trial, respondent objected to petitioner's questions about posttransaction events as irrelevant. We overruled this objection but observed that posttransaction evidence has its limits

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[55] *See also* Treas. Reg. § 1.482-1(f)(2)(iii)(A and B) (explaining that "results of a controlled transaction ordinarily will be compared with the results of uncontrolled comparables occurring in the taxable year under review" but in certain circumstances multiyear data may be considered).

(affecting weight more than admissibility).[56] Respondent expressed concern about petitioner's using posttransaction evidence to highlight the risks Facebook anticipated as of the transaction date (e.g., the shift from desktop to mobile) and downplay the corresponding opportunities (e.g., growing number of mobile users), reminding us that Facebook encountered these "supposed hiccups" on its way to becoming one of the world's most valuable companies.

Petitioner contends that posttransaction evidence is relevant precisely because respondent disputes testimony from Facebook's management and employees about the risks they saw as of the transaction date. For example, petitioner points to its struggle to develop a native mobile app, such as the Faceweb failure, to demonstrate that Facebook was reasonable to view the shift to mobile as a risk in 2010.

At trial, both parties focused on what was reasonably anticipated or expected as of the transaction date. They agree that we may look to what happened after the transaction date to assess the reasonableness of Facebook's expectations at the time. Both parties also introduced evidence and elicited fact-witness testimony about events after the transaction date as part of their cases-in-chief. And both adopt the opinions of experts who relied on information from after the transaction date.

The parties' fight shows how posttransaction evidence may be helpful to our evaluation of the parties' divergent views on Facebook's prospects when it entered into the CSA, even as it also illustrates the limits to its usefulness. We consider posttransaction evidence within those limits.

III. *Scope and standard of review*

We now turn to the scope and standard of review, and a bit of semantics. The parties agree that we review deficiencies resulting from the Commissioner's section 482 allocations de novo, under section 6213. Instead their focus is on the standard of review; they disagree over the deference we should afford respondent's determination.

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[56] At trial we permitted testimony about posttransaction developments but cautioned the parties that the more distant the development was the less relevant it would be.

The Commissioner has broad discretion under section 482, and an allocation will be set aside only if the taxpayer shows it to be arbitrary, capricious, or unreasonable. *DHL Corp. & Subs. v. Commissioner*, 285 F.3d 1210, 1216 (9th Cir. 2002), *aff'g in part, rev'g in part and remanding* T.C. Memo. 1998-461; *Coca-Cola Co. & Subs. v. Commissioner*, 155 T.C. 145, 201–02 (2020); *see also Sundstrand Corp.*, 96 T.C. at 353. However, we have not given the Commissioner deference akin to the "arbitrary and capricious" standard of review for agency actions that developed under the Administrative Procedure Act (APA). *See Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983). In reviewing a section 482 allocation, we afford the Commissioner deference in that we focus on the reasonableness of the Commissioner's reallocation. *Guidant LLC v. Commissioner*, 146 T.C. 60, 73 (2016). Reasonableness is measured by reference to the arm's-length range. If a result falls within the arm's-length range, it should not be adjusted. Treas. Reg. § 1.482-1(e)(1). A taxpayer may show that the Commissioner reached an unreasonable result by establishing that its income as reported reflects "the results that would have been realized if uncontrolled taxpayers had engaged in the same transaction under the same circumstances." *Id.* para. (b)(1). But that typically requires evidence of comparable uncontrolled transactions that support the taxpayer's return position. *Coca-Cola*, 155 T.C. at 202 (citing *Lufkin Foundry & Mach. Co. v. Commissioner*, 468 F.2d 805, 807–08 (5th Cir. 1972), *rev'g and remanding on other grounds* T.C. Memo. 1971-101).

For some transactions—namely, those involving high-profit intangibles—comparable transactions between unrelated parties simply do not occur in normal business settings. To show that the Commissioner has reached an unreasonable result in these cases, the taxpayer usually must establish that the Commissioner employed an unreasonable methodology to reach his result. *See id.* at 203. A taxpayer may do this by showing that the Commissioner's methodology implicated significant legal error or that the Commissioner implemented the methodology in an unreasonable manner (e.g., by employing erroneous assumptions, incorrect data, or internally inconsistent analysis). *See id.* at 203 & nn.32 & 33.

We engage in our own factfinding and legal analysis to redetermine the proper allocation of income. *See Sundstrand Corp.*, 96 T.C. at 354. If the taxpayer demonstrates that the Commissioner's allocation is unreasonable but fails to prove an alternative allocation that is arm's length, the Court, using its best judgment, "must

determine from the record the proper allocation of income." *Coca-Cola*, 155 T.C. at 203–04 (first quoting *Sundstrand Corp.*, 96 T.C. at 354; then citing *Hosp. Corp. of Am. v. Commissioner*, 81 T.C. 520, 596–97, 601 (1983); and then citing *Nat Harrison Assocs., Inc. v. Commissioner*, 42 T.C. 601, 617–18 (1964)). We may make partial allocations to the extent "the evidence shows that neither side is correct." *Id.* at 204 (first quoting *Eli Lilly & Co. v. Commissioner*, 856 F.2d 855, 860 (7th Cir. 1988), *rev'g in part on other grounds and remanding* 84 T.C. 996 (1985); and then citing *Amazon I*, 148 T.C. at 163–214).

IV. *2009 cost sharing regulations generally*

We now turn to the regulations themselves before we dig into the experts' opinions and our opinion of them.[57] As often is the case, the devil lies in their details.

The first sentence of the regulations states their objective: "The arm's length amount charged in a controlled transaction reasonably anticipated to contribute to developing intangibles pursuant to a [CSA], as described in paragraph (b) of this section, must be determined under a method described in this section." Temp. Treas. Reg. § 1.482-7T(a).

For PCT Payments, the "method[s] described" in Temp. Treas. Reg. § 1.482-7T are "the method or methods applicable under the other section or sections of the section 482 regulations, as supplemented by paragraph (g)." *Id.* para. (a)(2). Paragraph (g)(1) lists six methods to be used for "evaluating the arm's length amount charged in a PCT." These methods then are described in subparagraphs (3) through (8).[58]

For CST Payments, the "method described" in Temp. Treas. Reg. § 1.482-7T is the "RAB share method." *Id.* para. (a)(1). Under the RAB share method, controlled participants share IDCs in proportion to their respective RAB shares through CSTs. *Id.* paras. (a)(1), (b)(1)(i).

The valuation methods in the 2009 cost sharing regulations also coordinate with the general transfer pricing rules. "Each method must

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[57] Rather than summarize the experts' opinions in the facts, we review them after setting the regulatory context because of the central role the regulations play in our assessment.

[58] "Each method will yield a value for the compensation obligation of each PCT Payor consistent with the product of the combined pre-tax value to all controlled participants of the platform contribution that is the subject of the PCT and the PCT Payor's RAB share." Temp. Treas. Reg. § 1.482-7T(g)(1).

be applied in accordance with the provisions of § 1.482-1, except as those provisions are modified in this section." *Id.* para. (a).

Under section 482, as articulated in the regulations, the Commissioner "may make allocations between or among the members of a controlled group if a controlled taxpayer has not reported its true taxable income." Treas. Reg. § 1.482-1(a)(2). Section 482 is intended to "place[] a controlled taxpayer on a tax parity with an uncontrolled taxpayer by determining the true taxable income of the controlled taxpayer." Treas. Reg. § 1.482-1(a)(1). The true taxable income is determined as if the parties to the controlled transaction had conducted their affairs as unrelated parties "dealing at arm's length." *Id.* para. (b)(1).

The arm's-length standard generally is met "if the results of the transaction are consistent with the results that would have been realized if uncontrolled taxpayers had engaged in the same transaction under the same circumstances." *Id.* "[B]ecause identical transactions can rarely be located, whether a transaction produces an arm's length result generally will be determined by reference to the results of comparable transactions under comparable circumstances." *Id.*

The 2009 cost sharing regulations define what constitutes an arm's-length result in connection with a CSA. Temp. Treas. Reg. § 1.482-7T(a)(4) provides:

> A CSA produces results that are consistent with an arm's length result within the meaning of § 1.482-1(b)(1) if, and only if, each controlled participant's IDC share . . . equals its RAB share, each controlled participant compensates its RAB share of the value of all platform contributions by other controlled participants, and all other requirements of this section[59] are satisfied.

The regulations then authorize the Commissioner to make allocations to adjust the results of a PCT or CST so that they are consistent with this arm's-length result. *See id.* para. (i)(2) (CST allocations) and (3) (PCT allocations). The Commissioner also may make "periodic adjustments." *See id.* subpara. (6).

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[59] These "other requirements" include contractual, documentation, accounting, and reporting administrative requirements for a CSA. *See id.* para. (k).

PCT allocations are intended to ensure that each controlled participant compensates the RAB share value of any platform contributions made by other participants. *Id.* subpara. (3) (cross-referencing paragraph (a)(2), which cross-references paragraph (b)(1)(ii)). Respondent made a PCT allocation, asserting (in his posttrial opening brief) that Facebook US made platform contributions for which Facebook Ireland was obligated to compensate it by making payments computed using an NPV of $19.945 billion for the PCT Payment. We analyze respondent's PCT allocation *infra* Part V, PCT Payment.

CST allocations are intended to ensure that each controlled participant bears IDCs in proportion to its RAB share. *See id.* para. (i)(2). They may result from adjustments to the basis used for measuring the anticipated benefits and to the projections used to estimate RAB shares. *Id.* para. (i)(2)(i)(C) and (D). Respondent made a CST allocation, increasing Facebook Ireland's (and decreasing Facebook US's) RAB share. Respondent accepted the basis petitioner selected for measuring benefits (gross profit) but projected gross profit into perpetuity rather than the three years specified in the CSA. We analyze respondent's CST allocation in Part VI, CST Payments.

The 2009 cost sharing regulations also create a system for classifying the types of assets that CSA participants contribute to a CSA, and the types of costs they commit to bear under it. *See id.* paras. (c)(1), (d)(4), (j)(1)(i). Which valuation method is preferred for valuing the PCT Payment (and how it applies) turns on how assets and costs are classified, and which controlled participant contributed them. *See id.* para. (g). We therefore turn to the classification system next, before considering the methods.

A. *Classification of contributions*

The regulations divide potential contributions to a CSA into four categories: (1) platform contributions, (2) operating contributions, (3) cost contributions, and (4) operating cost contributions. *See id.* paras. (c)(1), (d)(4), (j)(1)(i). These contributions can be nonroutine or routine, depending on whether market returns can be identified for them. *See id.* para. (j)(1)(i) (defining nonroutine and routine contributions).

To classify the contributions here we use a few more terms from the regulations. First, the CSA Activity is defined as "the activity of developing and exploiting cost shared intangibles." *Id.* The intangible development activity (IDA) means specifically "the activity under the

CSA of developing or attempting to develop reasonably anticipated cost shared intangibles." *Id.* para. (d)(1)(i). And IDCs are those costs that "are directly identified with, or are reasonably allocable to, the IDA." *Id.* subdiv. (iii). A "reasonably anticipated cost shared intangible" is "any intangible, within the meaning of § 1.482-4(b), that, at the applicable point in time, the controlled participants intend to develop under the CSA." Temp. Treas. Reg. § 1.482-7T(d)(1)(ii). This concept is used in the definitions of IDA and platform contributions. *Id.* paras. (c)(1), (d)(1)(i).

1. *Contributions external to the CSA*

a. *Platform contributions*

"A platform contribution is any resource, capability, or right that a controlled participant has developed, maintained, or acquired externally to the [IDA] (whether prior to or during the course of the CSA) that is reasonably anticipated to contribute to developing cost shared intangibles." *Id.* para. (c)(1). A participant making a platform contribution must be compensated by the other parties for the benefits of that contribution. *See id.* paras. (a)(4), (b)(1)(ii), (c)(1). This compensation is made through the PCT Payment. *Id.* para. (b)(1)(ii).

b. *Operating contributions*

"An operating contribution is any resource or capability or right, *other than* a platform contribution, that a controlled participant has developed, maintained, or acquired prior to the CSA Start Date that is reasonably anticipated to contribute to *the CSA Activity* within the controlled participant's division." *Id.* para. (j)(1)(i) (emphasis added).

Because operating contributions cannot include platform contributions, they by definition contribute to the exploitation of the cost shared intangibles in a CSA participant's territory rather than development. They are borne by the CSA participant with the exclusive right to exploit the intangibles in that territory. *See id.* para. (a)(1) (requiring parties to share IDCs in proportion to RAB shares), (2) (requiring arm's-length consideration for PCTs), (3)(iii) (requiring arm's-length consideration for cross operating contributions, which benefit another CSA participant's territory, *see id.* para. (j)(1)(i), but not operating contributions or operating cost contributions).

2. *Contributions internal to the CSA*

a. *Cost contributions*

Costs incurred in connection with developing cost shared intangibles are classified as cost contributions; they essentially are synonymous with IDCs. *See id.* para. (d)(4) ("A controlled participant's cost contribution for a taxable year means all of the IDCs initially borne by the controlled participant, plus all of the CST Payments that the participant makes to other controlled participants, minus all of the CST Payments that the participant receives from other controlled participants.").

b. *Operating cost contributions*

Operating cost contributions, like operating contributions, are reasonably anticipated to contribute to exploiting cost shared intangibles as part of the CSA Activity but are incurred after the CSA begins. Operating cost contributions are defined in paragraph (j)(1)(i) as

> all costs in the ordinary course of business on or after the CSA Start Date that, based on analysis of the facts and circumstances, are directly identified with, or are reasonably allocable to, developing resources, capabilities, or rights (other than reasonably anticipated cost shared intangibles) that are reasonably anticipated to contribute to the CSA Activity within the controlled participant's division.

3. *Summary*

Platform contributions and operating contributions are external to the CSA while cost contributions and operating cost contributions are made as part of the CSA. *See id.* paras. (c)(1), (d)(4), (j)(1)(i). Platform contributions and cost contributions contribute to developing cost shared intangibles whereas operating contributions and operating cost contributions contribute to exploiting them. *See id.* paras. (c)(1), (d)(1)(i), (4), (j)(1)(i).

The matrix below summarizes the types of contributions, whether a contribution is related to exploitation or development, and its relation to the CSA.

Contribution type	*Exploitation or development*	*Relation to the CSA*	*Examples*[60]
Platform contribution	Development	External to the CSA	FOP technology
Operating contribution	Exploitation	External to the CSA	User community rights and marketing intangibles
Cost contribution	Development	Part of CSA Activity and part of IDA	RAB share of IDCs
Operating cost contribution	Exploitation	Part of CSA Activity but not part of IDA	Ad sales and marketing on or after CSA start date in ROW territory

B. *PCT Payment valuation methods*

With contributions classified, the regulations then provide rules for selecting one of the six methods they specify for calculating an arm's-length PCT Payment. These six methods are (1) the comparable uncontrolled transaction (CUT) method described in Treas. Reg. § 1.482-4(c) or the comparable uncontrolled services price (CUSP) method described in Treas. Reg. § 1.482-9(c); (2) the income method; (3) the acquisition price method; (4) the market capitalization method; (5) the RPSM; and (6) unspecified methods. Temp. Treas. Reg. § 1.482-7T(g)(1), (3)–(8).

The regulations also "provide[] supplemental guidance on applying the methods." *Id.* para. (g)(1). "Each method must be applied in accordance with the provisions of § 1.482-1, including the best method rule of § 1.482-1(c), the comparability analysis of § 1.482-1(d), and the arm's length range of § 1.482-1(e), except as those provisions are modified in this paragraph (g)." Temp. Treas. Reg. § 1.482-7T(g)(2)(i).

The best method rule requires that "[t]he arm's length result of a controlled transaction must be determined under the method that, under the facts and circumstances, provides the most reliable measure of an arm's length result." Treas. Reg. § 1.482-1(c)(1). "[T]he two primary factors to take into account are the degree of comparability between the

[60] These examples are not meant to be exhaustive but rather to illustrate the application of the definitions. *See* detailed discussion *infra* Part V.B.1.a.

controlled transaction (or taxpayer) and any uncontrolled comparables, and the quality of the data and assumptions used in the analysis." *Id.* subpara. (2). Factors for determining the degree of comparability include those listed in Treas. Reg. § 1.482-1(d)(1): functions, contractual terms, risks, economic conditions, and property or services. *See id.* para. (c)(2)(i). Treas. Reg. § 1.482-1(c)(2)(iii) also provides that "in evaluating different applications of the same method, the fact that a second method (or another application of the first method) produces results that are consistent with one of the competing applications may be taken into account."

Additional principles include rules regarding realistic alternatives and aggregation of transactions. Temp. Treas. Reg. § 1.482-7T(g)(2)(iii) and (iv). The aggregation rule in paragraph (g)(2)(iv) coordinates with the general aggregation rule in Treas. Reg. § 1.482-1(f)(2)(i). And the discount rate and financial projections rules provide guidance for selecting inputs into methods. Temp. Treas. Reg. § 1.482-7T(g)(2)(v) and (vi).[61]

The parties appear to agree that the CUT/CUSP, acquisition price, and market capitalization methods are not the best methods for valuing the PCT Payment. The reasons are obvious: The CUT/CUSP method does not apply because there is no comparable for the CSA as a whole; the acquisition price method does not apply because there was no acquisition; and the market capitalization method does not apply because Facebook was not publicly traded at the time of the CSA (a requirement for the method).[62] That leaves the income method, RPSM, and unspecified methods. We address the income method first because both parties' experts adopted it in some form.

1. *Income method*

The income method generally requires a controlled participant that does not make a nonroutine platform contribution (the PCT Payor) to pay another CSA participant (the PCT Payee) for (1) all of the financial benefits that the PCT Payee's nonroutine platform contribution is projected to generate in the PCT Payor's territory, minus

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[61] The remaining supplemental rules include those under Temp. Treas. Reg. § 1.482-7T(g)(2)(vii) ("Accounting principles"), (viii) ("Valuations of subsequent PCTs"), (ix) ("Arm's length range"), and (x) ("Valuation undertaken on a pre-tax basis").

[62] As we discuss later, respondent does argue that market valuations may be used to corroborate other methods.

(2) a market-based return for (a) the functions and risks the PCT Payor commits to perform and bear in its territory under the CSA (its operating cost contributions), and (b) the IDCs it commits to pay each year to further develop the cost shared intangibles in the CSA (its cost contributions).

The income method values the nonroutine contributions to the CSA (ones for which no market return can be identified) by projecting all expected value in a territory and then subtracting contributions for which market returns may be identified (routine contributions). The income method thus gives the PCT Payor a routine return on its operations to exploit the cost shared intangibles in its territory and on the funds it invests in the CSA to develop (or further develop) the cost shared intangibles. The remaining projected expected benefits—the projected nonroutine or residual benefits—go to the PCT Payee through the PCT Payment.

a. *Mechanics of the income method*

"The income method evaluates whether the amount charged in a PCT is arm's length by reference to a controlled participant's best realistic alternative to entering into a CSA." *Id.* subpara. (4)(i)(A). It thus solves for the PCT Payment, which it explains "will be an amount such that a controlled participant's present value, as of the date of the PCT, of its cost sharing alternative of entering into a CSA equals the present value of its best realistic alternative." *Id.*

The PCT Payor's "cost sharing alternative" is "the actual CSA" in which it commits to make an arm's-length PCT Payment and commits to bear the risk of intangible development by making cost contributions for the duration of the CSA. *Id.* subdiv. (i)(B). The present value of the PCT Payor's cost sharing alternative is "the present value of the stream of the reasonably anticipated residuals over the duration of the CSA Activity of divisional profits or losses, minus operating cost contributions, minus cost contributions, minus PCT Payments." *Id.* subdiv. (ii).

The PCT Payor's "best realistic alternative" generally is "to license intangibles to be developed by an uncontrolled licensor [the PCT Payee] that undertakes the commitment to bear the entire risk of intangible development that would otherwise have been shared under the CSA." *Id.* subdiv. (i)(A). "The licensing alternative is derived on the basis of a functional and risk analysis of the cost sharing alternative,

but with a shift of the risk of cost contributions to the licensor," the PCT Payee, hypothetically acting as an uncontrolled licensor. *Id.* subdiv. (i)(C). The PCT Payor still bears "the risks of any existing resources, capabilities, or rights, as well as of the risks of developing other resources, capabilities, or rights that would be reasonably anticipated to contribute to *exploitation* within the parties' divisions." *Id.* (emphasis added). These are the risks related to the PCT Payor's operating contributions and operating cost contributions. The income method thus values the functions that the PCT Payor still would perform had it simply licensed the intangibles (rather than agreeing to license and further codevelop them as under the actual CSA) by determining what an uncontrolled licensee would receive (or an uncontrolled licensor would pay) for them, and then discounting this arm's-length compensation at an appropriate discount rate. *See id.* subparas. (2)(v), (4)(i)(A).

In other words, under the licensing alternative the PCT Payor performs the same functions and bears the same risks that it commits to bear under the actual CSA *except for* its RAB share of IDCs (cost contributions). The PCT Payment excludes the value of the benchmarkable (i.e., routine) functions and risks performed by the PCT Payor, reflecting the principle that the PCT Payor need not pay for the value of activities that it is committing to perform in its territory. The present value of these activities (the best realistic alternative) may be determined using the CUT method as described in Treas. Reg. § 1.482-4(c)(1) and (2), or the comparable profits method (CPM) as described in Treas. Reg. § 1.482-5. *See* Temp. Treas. Reg. § 1.482-7T(g)(4)(iii)(A) ("Evaluation based on CUT") and (B) ("Evaluation based on CPM").

With this general framework established in paragraph (g)(4)(i), subdivisions (ii) through (iv) then "describe specific applications of the income method, but do not exclude other possible applications of this method." *Id.* para. (g)(4)(i)(A).

b. *When the income method is preferred*

The income method applies when only one CSA participant makes nonroutine platform contributions. *See id.* subdiv. (i)(D). Routine platform or operating contributions by the PCT Payor do not foreclose use of the income method. *See id.* subdiv. (v)(E). Any operating contributions by the PCT Payor should be accounted for in any comparable used for pricing the income method's licensing alternative

(along with operating cost contributions made on or after the start of the CSA), as explained above. *See id.*

Finally, the income method "may be used even if the PCT Payor furnishes significant operating contributions, or commits to assume the risk of significant operating cost contributions, to the PCT Payor's division," but any CUT method or CPM for valuing those "should be consistent with such contributions (or reliable adjustments must be made for material differences)." *Id.*

2. *Residual profit split method*

The RPSM is preferred if more than one CSA participant makes a nonroutine platform contribution. *See id.* subpara. (7)(i). The RPSM "evaluates whether the allocation of combined operating profit or loss attributable to one or more platform contributions subject to a PCT is arm's length by reference to the relative value of each controlled participant's contribution to that combined operating profit or loss." *Id.*

3. *Unspecified method*

An unspecified method is one not specified in Temp. Treas. Reg. § 1.482-7T(g)(3) through (7). *Id.* subpara. (8). An unspecified method "may be used to evaluate whether the amount charged for a PCT is arm's length." *Id.* It must be applied consistent with paragraph (g)(2) and Treas. Reg. § 1.482-1. Temp. Treas. Reg. § 1.482-7T(g)(8). It is preferred if "it provides the most reliable measure of an arm's length result under the principles of the best method rule." *Id.* (citing Treas. Reg. § 1.482-1(c) (best method rule)).

V. *PCT Payment*

Against this regulatory backdrop we turn to the main dispute before us: whether respondent's adoption and application of the income method, through his expert, Dr. Newlon, to determine the PCT Payment was reasonable, or whether we instead should adopt the unspecified method espoused ultimately by petitioner's expert, Dr. Unni.[63] Petitioner also challenges the 2009 cost sharing regulations on their

[63] Petitioner relies primarily on Dr. Unni's unspecified method, arguing that Dr. Reichert's RPSM and result confirm that Dr. Unni's method and result are superior to Dr. Newlon's.

face; we take that up after wading through their application to the facts that we have found.

A. *Respondent's PCT Payment determination*

1. *Dr. Newlon's key economic considerations*

Dr. Newlon identified two "Key Economic Considerations" that he then used to define the parties' cost sharing and best realistic alternatives: (1) the value of Facebook US's platform contributions should be evaluated in the aggregate (a package deal) and (2) Facebook Ireland had a weak bargaining position because Facebook US could have replaced it (effectively a "no deal" scenario). Because he framed these economic considerations as important factors that would affect how uncontrolled parties would evaluate the terms of the CSA, and what PCT Payment would be arm's length, we start with them.

Dr. Newlon first posited that a separate arm's-length charge cannot be reliably determined for each of the three assets transferred because the CSA was "a package deal in which Facebook US transferred to Facebook Ireland the aggregate benefits from the [ROW territory] that derive from all the assets and capabilities of Facebook's business." He defined the CSA, which he called the "Cost Sharing Deal," as the three September 15, 2010, agreements—the CSA, the FOP technology license, and the UBMI license. He adopted his package-deal approach because, in his opinion, that is how an uncontrolled party would have valued the assets transferred by the three agreements.

Relying on his package-deal approach, Dr. Newlon arrived at a PCT Payment amount by valuing all projected cashflows for the ROW territory that Facebook US would forgo by entering into the CSA agreements. Citing the aggregation rule in Temp. Treas. Reg. § 1.482-7T(g)(2)(iv), respondent adopts Dr. Newlon's opinion that the assets interact with, and complement, each other and therefore together are worth substantially more than the sum of their separate values. In respondent's view, the transaction's use of separate agreements to license distinct intangible assets, and Facebook's separate valuation of each (reporting separate royalty amounts in its transfer pricing documentation), was contrary to commercial reality. (Respondent also criticizes a separate valuation by Dr. Unni on this basis.)

Dr. Newlon also claimed that Facebook Ireland was in a weak bargaining position compared to Facebook US because it had minimal workforce and fixed assets as of the transaction date, whereas Facebook

US owned the largest social network in the world. Facebook Ireland owned no rights to the expected ROW territory revenue and could not generate for itself more than a routine market return for providing routine services without Facebook US. Dr. Newlon thus presumed that "Facebook US had the realistic alternative of retaining [the] expected future stream of benefits [from the ROW territory] by replacing Facebook Ireland," and that it could do this by replicating Facebook Ireland's workforce and fixed assets as of the transaction date. Dr. Newlon therefore opined that Facebook Ireland could not have negotiated a better outcome than compensating Facebook US for the present value of the ROW territory revenue Facebook Ireland expected to receive under the CSA, and being compensated as a routine service provider as it had been before the CSA.

2. *Dr. Newlon's method*

With his two key economic considerations established, Dr. Newlon selected and applied the income method. He did not classify the initial contributions to the CSA as either platform or operating contributions. In his view, labels "would make no difference" to an uncontrolled party. What would matter to an uncontrolled party is that it receive compensation for "the future benefits it was to forgo by entering into the deal." Nonetheless, to simplify his analysis he referred to the "aggregate payments" he computed "as PCT payments." He also concluded that the 2009 license of intangibles to Facebook Ireland (through the IPLA) would not significantly affect the arm's-length amount that Facebook Ireland otherwise would have been willing to pay under the CSA (as PCT Payor) and Facebook US otherwise would have been willing to accept (as PCT Payee).

Dr. Newlon estimated the arm's-length payment as the difference between the present value of the cashflows Facebook US would have received under his package "Cost Sharing Deal" and a services alternative which he considered Facebook Ireland's best realistic alternative.[64] In his package "Cost Sharing Deal" Facebook US transferred all ROW territory benefits to Facebook Ireland. Under his services alternative, he assumed that Facebook US would retain the

[64] Dr. Newlon acknowledged that the income method uses operating income rather than cashflows. He nevertheless discounted cashflows because, in his opinion, a DCF method "is consistent with standard valuation practices and the economic premise underlying those practices, which is that the value of a business asset is derived from the cash it is expected to generate, adjusted for risk and the timing of the receipt of that cash."

rights to the benefits from the FOP technology in the ROW territory and replace the functions and risks that Facebook Ireland committed to perform and bear under the CSA with the terms in the SMSAs. With respect to the sales and marketing functions Facebook Ireland committed to perform in the ROW territory under the CSA, he first applied a CPM analysis that used the profit levels of advertising agencies and produced a median return of cost-plus-13.9% for this function. He then rejected this return in favor of the cost-plus-8% he identified in the SMSAs. He concluded that Facebook US could have funded the FB Foreign Sales Affiliates at the same rate as it had before the CSA. He viewed the SMSAs as a "natural" realistic alternative to the sales and marketing functions that Facebook Ireland committed to perform under the CSA.[65] Dr. Newlon also concluded that the G&A functions that Facebook Ireland committed to perform in the ROW territory under the CSA could have been replaced at cost-plus-8%. Finally, to replace the data center management or operation services that Facebook Ireland committed to perform in the ROW territory, Dr. Newlon adopted the cost-plus-10% compensation specified in the DHSA.

To project the cashflows for purposes of calculating the present value of the actual CSA and his services alternative, Dr. Newlon adopted the LRP Base Case projections for 2010 through 2013 (that is, he included $1.9 billion in Other Revenue). For 2014 through 2020 he relied on certain assumptions from EY's transfer pricing documentation, with two significant adjustments. First, he adopted a 2013 operating margin (i.e., the ratio of operating income to revenue) from the LRP Base Case, whereas EY used a lower operating margin based on the LRP Downside Excluding Other Revenue. He then applied that operating margin forward through 2020 using the same assumption as EY, that the operating margin would decrease by 0.5% each year because of increasing competition. Second, he included substantial "acquisition expenditures" on the assumption that Facebook US would make future acquisitions for which Facebook Ireland would need to compensate it (thereby reducing the cashflow forgone by Facebook US by entering into the CSA). To estimate Facebook's future acquisition expenditures, he relied on key assumptions in the LRP along with Facebook's net investment expenditures for 2010 through 2018, including its actual acquisition expenditures, as reported in its financial statements for later years. For the terminal value of expected future cashflows, he selected a 1% long-run real growth rate for Facebook's ROW territory business

[65] We infer from Dr. Newlon's description that he means the SMSAs when he discusses Facebook's pre-CSA agreements.

and added a 2% inflation rate, which was equal to the Federal Reserve target for annual inflation.

Dr. Newlon next estimated discount rates for converting the actual CSA and his services alternative cashflows to present value by estimating the WACC for those cashflows. For the CSA cashflows, he estimated the WACC by using the capital asset pricing model (CAPM)[66] to estimate Facebook's cost of equity capital. To estimate Facebook's beta,[67] he calculated the median beta of a set of eight U.S.-traded public companies that earned most of their revenue from advertising and operated some form of online platform business: Alphabet Inc. (Google), Altaba Inc. (Yahoo!), Baidu, Inc., Local Corporation, SINA Corporation (Weibo), Travelzoo, WebMD Health Corp., and XO Group Inc. He did not "unlever" these comparables by adjusting for the cash and debt they held.[68] The resulting beta of 1.178, combined with his selected risk-free rate (3.55%) and equity risk premium (6.7%), produced a cost of equity of 11.44%.[69]

Dr. Newlon then made two adjustments to this cost of equity. First, because Facebook was a private company as of the transaction date, he added 2%. To derive this "pre-IPO adjustment," he started with an estimate for the cost of capital premium for VC over public firms of 2.9% to 3.3% (or 3.3% to 6.9% gross of fees), excluding small capitalization firms, citing Andrew Metrick & Ayako Yasuda, *Venture Capital and the Finance of Innovation* 76, 79 (2d ed. 2011) (Metrick & Yasuda) as his source. He then decreased these estimated premia to 2% because he concluded that Facebook's business as of the transaction date was more advanced than that of the average recipient of a VC investment. Second, he added a 1% "international adjustment" because

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[66] "CAPM is a standard and widely used method to determine a company's cost of equity capital. Under the CAPM the expected rate of return for a company's equity is generally the risk-free rate of return plus the product of beta and an equity risk premium." *Amazon I*, 148 T.C. at 184 n.34.

[67] Beta represents the magnitude of systematic risk of an investment as compared to the market. We discuss beta in some detail *infra* Part V.B.3.b.ii.

[68] Dr. Newlon explained the idea of unlevering as based on the premise that cash has a zero beta so it can be separated from the beta for the operating business. Once the combined beta for the cash and the operating business is known, the beta for the operating business alone can be derived.

[69] Dr. Newlon selected his risk-free rate by looking to the yield on 20-year U.S. Treasury bonds. He selected his equity-risk premium by looking to data from Ibbotson Associates.

he concluded that Facebook's business in the ROW territory was at a "somewhat" earlier stage of development and therefore would be subject to "somewhat" greater risk than the overall business. Applying these two adjustments, Dr. Newlon concluded that the discount rate for the CSA cashflows was 14.44%.

For his services alternative cashflows, Dr. Newlon estimated the WACC for three categories of services: sales and marketing services (8.81%), data center services (9.63%), and G&A services (8.31%). He estimated these WACCs by reference to comparable third-party service providers for these categories in the United States, Canada, and Western Europe.

Applying the specified income method with these inputs, Dr. Newlon concluded that the arm's-length PCT Payment value falls within a range of $18.757 billion to $21.147 billion (using different discount rates he identified as permitted); using his median discount rates stated above he computed a PCT Payment value of $19.945 billion. Respondent submits that this is the arm's-length PCT Payment value.

Dr. Newlon tested the reasonableness of his two key valuation inputs—the financial projections in the ROW territory and the appropriate discount rates for each alternative—by using them to estimate the present value of Facebook's global business as of the transaction date (approximately $30 billion), and then comparing that enterprise value estimate to various contemporaneous valuations of Facebook. These contemporaneous valuations include section 409A valuations prepared by KPMG in 2010 (after the transaction date) which estimated Facebook's enterprise value to be approximately $28.5 billion, and financial news stories, which estimated Facebook's market capitalization to be around $30 billion (based on secondary market transactions and equity investments in Facebook in 2010). Dr. Newlon observed that the enterprise value implied by his inputs is "not high" compared to one contained in a November 2010 Bloomberg article ($41 billion) or compared to the implied equity value used by the investment bank for its investment evaluation in December 2010. In his view, the PCT was akin to a transfer of the entire business, which justified testing his valuation inputs against these contemporaneous enterprise valuations. He therefore contended that lowering his financial projections or increasing his discount rate would lead to a result that is inconsistent with contemporaneous valuations of Facebook.

Respondent offers two other experts, Ilya Strebulaev and Carl Saba, who also estimated Facebook's market capitalization as of the transaction date to be above $30 billion using secondary market transactions.

B. *Application of 2009 cost sharing regulations*

As we explained *supra* Part III, under *Coca-Cola* we must decide whether Dr. Newlon's methodology, adopted by respondent, was reasonable before we consider petitioner's competing methodology. Applying the regulations to evaluate Dr. Newlon's valuation, we conclude that the income method is the best method but Dr. Newlon used erroneous inputs and therefore reached an unreasonable result.

1. *Method selection*

A threshold question is which method—the income method, the RPSM, or an unspecified method—should be applied. This turns on whether Facebook Ireland (and not just Facebook US) made a nonroutine platform contribution to the CSA, as petitioner contends. *See* Temp. Treas. Reg. § 1.482-7T(g)(4)(i)(D). If Facebook Ireland also made such contributions, then the RPSM is favored over the income method. *See id.*

To resolve this issue, we first classify the contributions made to the CSA as either platform or operating contributions. We then decide whether Facebook Ireland made any nonroutine platform contributions.

a. *Classifying initial contributions*

The parties agree that the existing FOP technology contributed to the CSA on the transaction date, through the FOP technology license, would contribute to the development of future versions of the FOP technology under the CSA. It therefore is a platform contribution. They dispute whether the user community rights and marketing intangibles also are platform contributions (respondent's position)[70] or operating contributions (petitioner's position). The answer turns on whether these rights are reasonably anticipated to contribute to *developing* cost shared intangibles under the CSA (making them platform contributions) or to *exploiting* them under the CSA (making them operating contributions).

[70] Respondent does not appear to argue that these rights fall under the definition of FOP technology.

Respondent attempts to frame the social graph as technology separate from the FOP technology, that, like the FOP technology, was made more useful by user data. This framing is inconsistent with the facts. The user community rights and the marketing intangibles were operating contributions because they contributed to the exploitation of the FOP technology under the CSA but not to its further development.

Respondent asserts that "user activity data was the inventive force behind many of Facebook's signature features," but the record shows that it was an input or output, not an "inventive force." User data feeds into, or out of, the FOP technology; it does not develop, create, or produce it. Although user data informed how software engineers further developed the FOP technology,[71] the data itself did not develop it. As its name implies, the user communities used the FOP technology, and the FOP technology was more useful with their data. The social graph was a representation of the user data; it was not separate technology that could be exploited on its own (without some sort of technology platform). Similarly, Facebook's marketing intangibles did not create or develop the FOP technology; rather, they attracted users, advertisers, and developers to the FOP technology.

Respondent, in arguing that everything is a platform contribution, does not attempt to distinguish between platform and operating contributions. He puts them both in the same bucket of "valuable contributions" and essentially argues that a platform contribution is anything an uncontrolled party would pay for. This position is consistent with Dr. Newlon's first key economic consideration: He does not classify the contributions to the CSA but rather projects all ROW territory profits and then says that we may call them platform contributions.[72] His approach fails to apply the regulations and is logically inconsistent.

Even if the income method is intended to capture everything of value, it still distinguishes between platform and operating contributions. The Ninth Circuit did not allow the Commissioner to avoid his definition of "intangible" in Treas. Reg. § 1.482-4(b) by pointing to what uncontrolled parties would pay for. *Amazon II*, 934 F.3d at 985

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[71] When respondent asked a Facebook product manager whether the development process was "data-driven," she countered that it was "data-informed."

[72] On the other hand, he seems to agree that these same contributions are operating cost contributions rather than cost contributions because he includes them in his best realistic alternative.

n.10 ("The Commissioner points to no language in the statute or regulations suggesting that the definition of what constitutes an intangible is determined by asking whether an uncontrolled party would pay for it."). Nor will we let him avoid applying the definitions of "platform contribution" and "operating contribution" in the 2009 cost sharing regulations here.

In sum, the user community rights and the marketing intangibles[73] are operating contributions (if contributed to the CSA at the outset) and operating cost contributions (if part of Facebook Ireland's ongoing exploitation of the cost shared intangibles under the CSA). This classification does not mean they are not compensable under the income method, but it does affect how we account for them.

b. *Octazen technology*

Next we must determine whether Facebook Ireland made nonroutine platform contributions to the CSA. Respondent contends that the income method can be used because only Facebook US contributed nonroutine intangibles to the CSA. He further contends that Facebook Ireland did not make a contribution because it did not own nonroutine intangible property before the CSA.[74] Petitioner disagrees, highlighting the Octazen technology that it had acquired and developed external to the CSA.[75]

The Octazen technology was a platform contribution. It was "developed, maintained, or acquired externally to the intangible development activity," *see* Temp. Treas. Reg. § 1.482-7T(c)(1), because Facebook acquired it before the transaction date, in February 2010. And

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[73] Here the marketing intangibles were licensed not to be further developed in the CSA but to be used in exploiting the cost shared intangibles in the CSA.

[74] Respondent refers to FIH rather than Facebook Ireland and attempts to support his position by arguing that FIH had "no employees to manage risk, negotiate agreements or to perform functions." It is true that FIH (a holding company) did not have employees, but that is beside the point; FIH wholly owned FIL, and FIL elected disregarded entity status before the transaction date. So we consider what FIL had too.

[75] Petitioner also contends that if the user community rights are a platform contribution, as respondent argues, Facebook Ireland made a platform contribution of the user, advertiser, and developer communities arising out of the costs allocated to Facebook Ireland by Facebook US under the 2009 Agreements, and this additional platform contribution similarly would bar the application of the income method. Having concluded above that the user community rights and marketing intangibles are operating contributions, we need not address this issue.

future versions of the FOP technology were anticipated to include future versions of contact importer technology that incorporated the Octazen technology. Respondent does not dispute that the Octazen technology was a platform contribution.

But it was a platform contribution made by Facebook US, not Facebook Ireland. Facebook US purchased the stock of Bonus Energy Sdn Bhd in February 2010, thereby acquiring the Octazen technology. Facebook US made the corresponding accounting entry under the description "Octazen acquisition." And the agreements transferring the Octazen technology to Facebook Ireland were not executed until December 2010. Although they had an effective date of March 2010, the record contains no other evidence that the transfer was effective at that time. Confronted with Facebook Ireland's failure to record any accounting entries related to the acquisition, petitioner argues that Facebook Ireland would not record a self-created intangible; that does not explain why Facebook US made the accounting entry. We conclude that as of the transaction date, Facebook US owned the Octazen technology, not Facebook Ireland.[76]

c. *Facebook Ireland's contributions*

Petitioner points out that the FOP technology license recognized that each party could make a platform contribution. And any payment from Facebook Ireland to Facebook US relating to Facebook US PCT Property would be net of any payment from Facebook US to Facebook Ireland relating to Facebook Ireland PCT Property. Petitioner's problem is that it has not shown that Facebook Ireland did make a platform contribution.

Citing Treas. Reg. § 1.482-4(f)(3)(i)(A), petitioner argues that Facebook Ireland was the sole owner of the user community rights developed before the transaction date in the international market because it was allocated certain costs (for later reimbursement) under the 2009 Agreements.[77] We agree with petitioner that Facebook Ireland

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[76] Respondent also contends that the Octazen technology is not a "significant" nonroutine contribution supporting application of the RPSM if we find that Facebook Ireland contributed it. Because we find that Facebook US acquired and contributed the Octazen technology, we need not decide whether it is sufficiently "significant" or whether the significance of a contribution is relevant.

[77] The parties dispute when the 2009 Agreements were effective. Respondent contends that the 2009 Agreements were not effective January 2009 and that we

already was performing services in the international market before the transaction date; but nothing in the IPLA or other 2009 Agreements granted Facebook Ireland legal ownership of resources, capabilities, or rights that constitute platform contributions. As we concluded above, the user community rights are operating contributions, not platform contributions, because they relate to exploiting the cost shared intangibles, not to their further development. And Facebook Ireland's pre-CSA operating contributions do not preclude the income method.

Finally, we will not ignore the fact that petitioner's own valuation expert, Dr. Unni, initially selected an aggregate income method, after assuming, as instructed by counsel, that Facebook Ireland made no platform contributions. Significantly, Dr. Unni does not opine in his opening report that the income method is not the best method. Having found that Facebook Ireland made no platform contributions, if we consider only the opening reports of the parties' key valuation experts (Drs. Newlon and Unni), we might conclude that they agree about method and dispute only inputs. We discuss Dr. Unni's shifting opinions *infra* Part V.B.3, after we examine the issues with Dr. Newlon's inputs. For now, we observe that Dr. Unni's opening report supports a conclusion that respondent's selection of the income method is reasonable.

To be sure, we also reject Dr. Newlon's argument that Facebook Ireland did not or could not assume any risks under the CSA beyond the services that it performed before the transaction date. Under the CSA it could make operating cost contributions to the extent of those functions it committed to perform under the CSA. It started hiring employees by January 2009, and by the transaction date it had 171 employees in ad sales and user operations and other support functions. Before the CSA, it made operating contributions to the extent of the services it performed before the transaction date. Under the CSA, it committed to keep performing and to bear the risk of performing these functions in the ROW territory.

The income method accounts for operating contributions by selecting a comparable return for them. We therefore consider Facebook Ireland's operating and operating cost contributions when selecting a comparable for the best realistic alternative. *See* Temp. Treas. Reg.

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should look to their execution date in December 2009. The effective date of the 2009 Agreements is not relevant given our conclusion that those agreements did not transfer ownership of any platform contributions.

§ 1.482-7T(g)(4)(v)(E). Both parties acknowledge that there are benchmarks for these routine functions and risks. They do not entitle Facebook Ireland to any additional profit beyond that benchmark return. *See id.*

We thus conclude that the income method, and not the RPSM, applies under the terms of Temp. Treas. Reg. § 1.482-7T(g)(4) because Facebook Ireland did not make a nonroutine platform contribution.

2. *Aggregation*

In considering the value of platform and operating contributions to determine an appropriate PCT Payment, the 2009 cost sharing regulations contemplate that PCT(s) and other transactions may be aggregated. Temp. Treas. Reg. § 1.482-7T(g)(2)(iv) provides that aggregation may be appropriate if "the multiple transactions are reasonably anticipated, as of the date of the PCT(s), to be so interrelated that the method that provides the most reliable measure of an arm's length charge is a method under this section applied on an aggregate basis for the PCT(s) and other transactions."

The income method permits aggregate financial projections (capturing the value of any platform or operating contributions) but calls for an adjustment to the licensing alternative comparable if the PCT Payor makes operating contributions. *Id.* subpara. (4)(v)(E). This adjustment will account for the contributions of Facebook US and Facebook Ireland in full. We therefore do not see a basis on this record for rejecting an aggregate valuation (one that does not attempt to value separately the resources, capabilities, and rights contributed by Facebook US to the CSA as a platform contribution).[78] We instead take into account the other contributions, including the operating and operating cost contributions made by Facebook Ireland when we

[78] Dr. Unni's opening report did offer a separate valuation that allocated ROW territory revenue between the FOP technology and the user community rights in accordance with the developer/platform revenue split (70/30), after accounting for the 1% royalty for the marketing intangibles. To value the user community rights, he subtracted his separate FOP technology value from his aggregate value, again after accounting for the 1% royalty for the marketing intangibles. We generally did not find his opinion compelling, as we explain further below, but observe it does in part support the aggregate approach adopted by Dr. Newlon.

consider appropriate inputs for the income method.[79] Although Dr. Newlon's failure to classify contributions did not cause him to select an incorrect method under the regulations (because Facebook Ireland did not make nonroutine platform contributions), his rejection of one part of the regulations raises concerns about his application of another part, namely his income-method inputs, the next stop in our analysis.

3. *Income-method inputs*

Having concluded that the income method can apply, we next consider whether respondent implemented it reasonably. We conclude that he did not. The root of many of respondent's implementation errors is his failure to adhere to the income method as set out in his regulations.

a. *Financial projections*

The first key income-method input we consider is the financial projections. A reliable estimate of the value of the parties' platform and operating contributions depends upon using reliable projections. *See id.* subpara. (2)(vi) ("The reliability of an estimate of the value of a platform or operating contribution in connection with a PCT will often depend upon the reliability of projections used in making the estimate."). To that end, the regulations provide that those "projections should reflect the best estimates of the items projected (normally reflecting a probability weighted average of possible outcomes)." *Id.* A probability-weighted financial forecast also is referred to as a 50/50 forecast. "[P]rojections that have been prepared for non-tax purposes are generally more reliable than projections that have been prepared solely for purposes of meeting the requirements in this paragraph (g)." *Id.*

i. *Other Revenue*

Respondent contends that Dr. Newlon correctly adopted the financial projections from the Base Case scenario in the LRP, including $1.9 billion in Other Revenue, to build his projected cashflows for the

[79] This to a degree is merely semantics as we concluded above that only Facebook US made a nonroutine platform contribution. But the parties also dispute how we should account for other contributions to the CSA. Dr. Newlon's method uses as its starting point Facebook's ROW territory cashflows; that is, he did not make any allowance for cashflows to Facebook Ireland except as part of the CSA. Therefore, we need to ensure that his method properly accounts for (and values) those cashflows.

ROW territory. We disagree. Revenue projections that include Other Revenue are not reliable projections for two reasons.

a) *The Base Case was not a probability-weighted average forecast.*

First, the Base Case scenario, including Other Revenue, was not a probability-weighted average forecast within the meaning of Temp. Treas. Reg. § 1.482-7T(g)(2)(vi). Other Revenue was aspirational with no underlying projections to support it. By contrast, the projections for Ads and Credits Revenue were the product of a bottoms-up estimating process that the finance team used to make a 50/50 forecast.

The bottoms-up Ads and Credits Revenue forecasts could be achieved only through continued innovation and were themselves an optimistic view of Facebook's prospects' growing from approximately $1.9 billion in 2010 to approximately $8.1 billion by 2013. Ms. Sandberg expressed concerns about Facebook's ability to achieve a roughly $8 billion Ads and Credits Revenue projection. Nonetheless, Mr. Zuckerberg added Other Revenue to these optimistic bottoms-up projections because he wanted to challenge Facebook's M team and employees.

The LRP flagged the aspirational and unknown nature of Other Revenue. Reaching $10 billion in revenue by 2013 was a "proposed financial goal." Facebook's M team questioned whether the Board was comfortable planning for it given the risks of not ramping up Credits and not identifying additional revenue opportunities over the coming years. Reflecting these doubts, the LRP contained financial scenarios that excluded Other Revenue and excluded both Other Revenue and Credits, along with a more optimistic upside scenario consisting of large round numbers. (Nothing in the record suggests that the upside scenario was the product of a forecast, let alone a 50/50 forecast.) Because Facebook had yet to identify where Other Revenue would come from, it listed "[b]egin considering ideas for $2B in 'other' revenue by 2013" as a next step.

Facebook did not attribute material costs to Other Revenue. The LRP stated that Facebook "ha[d] not aggressively planned for significant increased expenses (beyond ~250 heads) to support an entirely new revenue stream." Mr. Ebersman indicated that this was because it would be better to add expenses only after Facebook knew where Other

Revenue was going to come from. The absence of associated costs reflects how and why Other Revenue was added to the underlying projections in the LRP Base Case: by Mr. Zuckerburg to challenge employees to create new things.

Finally, when Facebook provided the Base Case projections to the investment bank conducting its due diligence for a potential equity investment a few months later, the investment bank haircut the projections for each year. It viewed Facebook's forecast as "bullish" for Ads and "optimistic" for Credits, and it was skeptical of Facebook's projection of Other Revenue from "products that had yet to be developed." Its haircut to the LRP Base Case's 2013 projected revenue exceeded Other Revenue for that year, resulting in a revenue projection below the downside projection that petitioner advocates. This roughly contemporaneous third-party assessment is perhaps the best evidence of what revenue forecast an informed third party would view as reasonable. Of course, the investment bank might have considered a more pessimistic forecast to its advantage (to the extent it would give the bank leverage to negotiate more favorable terms). We discount that possibility, however, because the forecast was for the bank's internal decision-making only. Moreover, we have not adopted the bank's $3.235 billion haircut for 2013; we exclude only the $1.9 billion Other Revenue which the record establishes was not associated with any reasonably anticipated revenue sources.

With hindsight, we also know that Facebook's actual revenue fell somewhere between the projections applying the bank's haircut and the LRP Downside Excluding Other Revenue for 2012 and for 2013 (the year of the largest disagreement between the parties). As we explained above, evidence from after the transaction date may help us evaluate what was reasonable as of that date. *See, e.g.*, *Estate of Gilford*, 88 T.C. at 52. This evidence supports our conclusion that the finance team's forecast that excluded Other Revenue was reasonable.

Respondent's arguments for the Base Case projections ignore the overall picture. Respondent's primary argument is that Facebook prepared the Base Case projections for business, not tax, purposes and therefore, under Temp. Treas. Reg. § 1.482-7T(g)(2)(vi), they are more reliable than projections excluding Other Revenue. But the LRP included those other financial scenarios. All of them were contemporaneous business projections, and thus considered more reliable generally than projections prepared solely for tax purposes. We must decide which of the scenarios in the LRP is closest to a probability-

weighted forecast, taking into account the qualifications and caveats in the LRP along with the context provided by witnesses.

Respondent also contends that the Base Case projections most reliably estimate the value of Facebook's platform and operating contributions because they were part of the final document presented to Facebook's Board. But once again so were the other financial scenarios, including the Downside Excluding Other Revenue. And while the LRP focused on the Base Case, the LRP repeatedly highlighted that Other Revenue was a plug to reach the goal of $10 billion in revenue by 2013, it was a big number, Facebook did not know how to generate it, and Facebook would begin thinking about ideas for how to do so. And Facebook did not identify significant costs to produce Other Revenue.

Respondent similarly argues that the Base Case is more reliable because Mr. Zuckerberg approved it. But Mr. Zuckerberg did not merely approve it; he originated it. He added Other Revenue to the finance team's bottoms-up projections on the basis of his entrepreneurial instinct and his desire to challenge his employees. Ms. Li, Mr. Ebersman, and Mr. Zuckerberg, all of whom we found credible, testified consistently as to how and why it was added to the Base Case. They agreed that, leading up to June 2010, Ms. Li developed a bottoms-up model projecting revenue from Facebook's existing revenue streams (Ads and Credits); Mr. Ebersman presented it to Mr. Zuckerberg in mid-June 2010; Mr. Zuckerberg's desire to aim higher led to an internal debate; Mr. Zuckerberg ended the debate by instructing the finance team to add Other Revenue to the bottoms-up forecast for Facebook's existing revenue streams; and the product of this process was the LRP Base Case that he and Mr. Ebersman presented to the Board in August 2010, along with the other scenarios. This history supports our finding that the top-down Base Case projection with Other Revenue was not a probability-weighted forecast. The testimony about the origin of Other Revenue is not "revisionist history" as respondent contends. It is credible and helpful to the Court in deciding which financial projections should be used to estimate the value of the platform and operating contributions.

Respondent contends that how Facebook used the Base Case affirms that it represents the best revenue projections. Respondent notes that Facebook presented the LRP to its employees and management as its business plan. But again the entire LRP, not just the Base Case, was presented to management. And presenting Other

Revenue to employees as part of Facebook's LRP is consistent with Mr. Zuckerberg's desire to challenge them.

Respondent adds that Facebook approved KPMG's section 409A valuations, which relied on the Base Case, and used those valuations both for financial reporting and to set stock-based compensation for its employees for the third quarter of 2010 (and thereafter). And Facebook represented to the Securities and Exchange Commission, in 2011 before its IPO, that its prior section 409A valuations, including those that relied on the Base Case projections, were "performed using the most appropriate valuation methodology based on all the facts and circumstances known to [it]." But KPMG used various valuation methods in its analysis. And Facebook's Board approved the use of the section 409A valuation reports to determine the FMV of Facebook's common stock for compensation purposes, not to determine the arm's-length value of a PCT Payment.

Finally, respondent emphasizes that Facebook provided the Base Case projections to outside investors, such as the investment bank in December 2010. But again respondent focuses on the fact that Facebook shared the Base Case projections, not on the fact that the investment bank haircut those projections, as we explained above. Respondent's posttrial opening brief characterizes the investment bank's investment in Facebook as "a *real-world* assessment of the expected return of an arm's length investor." That is our point exactly. In evaluating the potential investment, this arm's-length investor's real world assessment of Facebook's expected revenue cut Facebook's 2013 Base Case revenue projections by nearly one-third.

The fact that Facebook represented in October 2013, during the IRS's examination for Facebook's 2010 tax year, that the Base Case projections in the LRP were "the most likely scenario to occur" is the strongest point in respondent's favor. But it is contradicted by the credible recollection of multiple witnesses regarding the development of the financial projections. We favor the credible testimony of multiple witnesses whom we observed, who were present at the time the projections were adopted, over a single statement years later.

b) *Projections excluding Other Revenue more reliably reflect Facebook US's platform and operating contributions.*

A separate reason justifies excluding Other Revenue from projections we use to estimate the value of Facebook US's contributions to the CSA: including it would cause Facebook Ireland to pay for more than the platform or operating contributions Facebook US made as of the transaction date. Other Revenue is not attributable to a "resource, capability, or right" that Facebook US "developed, maintained, or acquired" as of the transaction date. Temp. Treas. Reg. § 1.482-7T(c)(1), (j)(1)(i).

The 2009 cost sharing regulations expanded the definition of assets that a CSA participant is required to pay for upfront from "pre-existing intangible property," Treas. Reg. § 1.482-7A(g)(2), to "any resource, capability, or right that a controlled participant has developed, maintained, or acquired externally to the [IDA] (whether prior to or during the course of the CSA)," Temp. Treas. Reg. § 1.482-7T(c)(1), (g)(4)(i)(C). The parenthetical "(whether prior to or during the course of the CSA)" appears to anticipate that a participant in a current CSA might develop or acquire resources, capabilities, or rights externally to the CSA (that is, not through IDCs) that are reasonably anticipated to contribute to developing cost shared intangibles. If non-CSA resources, capabilities, or rights also are contributed to the CSA, a PCT Payment also would cover them.[80] *See also id.* para. (g)(4)(i)(C) (discussing the "*existing* resources, capabilities, or rights" that are transferred under the actual CSA (emphasis added)). But the idea behind the PCT Payment is that it compensates for *contributions to* the CSA, not *profits from* the CSA. The regulations thus continue to limit compensable contributions to resources, capabilities, or rights that were already developed at the time of the initial PCT or were developed separate from the CSA. Respondent does not dispute that only platform and operating contributions are compensable through a PCT Payment, or that platform contributions do not include rights that are acquired by cost contributions (IDCs). And petitioner does not object to including the

[80] In this case, the only PCT at issue is the one on the transaction date; the parties focus on what was contributed on that date, and neither points to any resource, capability, or right arising after the transaction date and external to the IDA that is contributed to the CSA. And given Dr. Newlon's inclusion of all future projected revenue from the ROW territory, nothing would be left outside the CSA.

enhanced results or "lift" provided by the resources, capabilities, or rights that were contributed to the CSA in valuing the PCT Payment (assuming that the regulations are valid), as we explain below.

The $1.9 billion Other Revenue plug was not attributable to any existing "resource, capability, or right" that Facebook US "had developed, maintained, or acquired" as of the transaction date, but instead a future unknown source.[81] And any future unknown revenue source would be a product of the CSA, not external to it, because the CSA here appears to sweep in all future international operations (reflected in the valuation experts' use of all future projected revenue from the ROW territory).

The reasonably expected revenue from Ads and Credits already was included in the $8.1 billion finance team forecast. And Mr. Zuckerberg understood the bottoms-up projections to reflect revenue growth from "things that exist." The plug was added because, as he explained, he believed Facebook "could create new things" in the future. The LRP noted that Other Revenue "reflect[ed] the expectation that [Facebook] will identify additional revenue opportunities over the coming years." It stated that Other Revenue "[c]ould come from expanding [Facebook's] existing Ads or Credits strategies." It also suggested that Other Revenue may come from "new sources," and that the Board would "[b]egin considering ideas for $2B in 'other' revenue by 2013." This reinforces that Other Revenue is too speculative to be included in the revenue projections to be used in the income method.

To be sure, a portion of the value of the cost shared intangibles developed in the CSA will be attributable to Facebook US's platform contributions. *See id.* para. (j)(1)(i) ("Cost shared intangible means any intangible, within the meaning of § 1.482-4(b), that is developed by the IDA, *including any portion of such intangible that reflects a platform contribution*." (Emphasis added.)). The preamble to the regulations refers to this as "enhanced results." T.D. 9441, 74 Fed. Reg. 342–46.[82]

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[81] Other Revenue represents the "unknown unknowns" whereas the $8.1 billion forecast represents the "known knowns" and the "known unknowns" (the "lift" from further development). *See* Donald Rumsfeld, *Known and Unknown: A Memoir* xiii (2011).

[82] The preamble states: "[T]he temporary regulations only require the PCT Payor to compensate the PCT Payee for platform contributions," and "depending on the facts and circumstances," "[t]he period of enhanced results that justifies the platform investment in such circumstances effectively would correspond to a finite, not a perpetual, life." T.D. 9441, 74 Fed. Reg. 342–46.

The parties refer to the enhanced results as "lift" and agree that the definition of a platform contribution captures the enhanced results that the existing resources, capabilities, and rights provided to the CSA.

And the Ads and Credits Revenue projections in the LRP already reflect Facebook's expectation that it would continue to develop its FOP technology, grow its user communities, and strengthen its marketing intangibles and recruiting brand. In other words, Facebook expected that what existed on the transaction date would enhance the results of the CSA into the future. These enhanced results are attributable to the resources, capabilities, and rights that existed on the transaction date; Other Revenue is not. It is not tied to any existing resource, capability, or right and therefore is not attributable to a platform contribution.

Respondent's argument that Other Revenue should be included rests on Facebook's (specifically, Mr. Zuckerberg's) belief that Facebook would continue to innovate and grow in the years after 2010. But the expectation of continued innovation of Ads and Credits—Facebook's existing sources of revenue—is captured in the bottoms-up projections, which project high growth for these revenue sources through 2013 (55% and 148% CAGR, respectively). The definition of a platform contribution captures the enhanced results that these existing resources provided to the CSA. *See id.* An abstract expectation of innovation is not a separate "resource, capability, or right" that Facebook US possessed and contributed to the CSA on the transaction date. Nor does respondent explain how a belief in future innovation can be an existing resource, capability, or right, or why it would not already be included in any 50/50 forecast.[83]

A taxpayer would not enter into a CSA if it did not believe it could innovate and create new products in the future; the purpose of a CSA is to cofund new intangible development. Respondent tries to convert Facebook's belief in future innovation into an independent existing resource, capability, or right by highlighting Facebook's success innovating before the transaction date. But reasonably anticipated cost shared intangibles should be captured by a 50/50 forecast, here the finance team's $8.1 billion forecast. And the regulations do not require compensation for more than that. We also know that an uncontrolled party would not pay for Other Revenue because we know that an

[83] The wording of the regulations does not sweep so wide as to capture future opportunities (or income-generating potential) except as part of an identifiable "resource, capability, or right."

uncontrolled party cut it (and more) from the projections it used to decide to invest in Facebook's equity.

Finally, respondent acknowledges that some intangibles would be produced by IDCs; the parties expected Facebook Ireland to fund new product development and innovation under the CSA through its ongoing CSA Payments. It is difficult to reconcile this acknowledgment with a conclusion that Facebook Ireland also should pay Facebook US through the PCT Payment for the revenue expected to follow from unforeseen new products (this would be the effect of including revenue attributable to the unforeseen in the revenue projections). That is, because a platform contribution is defined as a resource, capability, or right that is reasonably anticipated to contribute to the development of future cost shared intangibles, Temp. Treas. Reg. § 1.482-7T(c)(1), (j)(1)(i), if the future cost shared intangibles were not reasonably anticipated at the time of the platform contribution, then the platform contribution could not reasonably be anticipated to contribute to their development.

In sum, projections that exclude Other Revenue are more reliable for estimating the value of Facebook US's platform and operating contributions. Dr. Newlon erroneously included Other Revenue in his projections.[84]

ii. *Acquisition expenditures*

Another adjustment to Dr. Newlon's projections is necessary. In estimating the PCT Payment, he subtracted $9.8 billion in estimated acquisition expenditures. Petitioner contends that if this cashflow adjustment is not made in Dr. Newlon's model, his resulting international enterprise value of $32.5 billion exceeds his purported Facebook worldwide enterprise value of $30.4 billion. This result, according to petitioner, confirms the illogic of his projections.

Respondent defends the adjustment as conservative because doing so lowered the PCT Payment. Dr. Newlon defended this cashflow

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[84] Excluding Other Revenue means we also must consider whether any expenses should be excluded and if so how those should be determined. The LRP included minimal expenses associated with Other Revenue. Respondent points out that removing additional expenses would increase the PCT Payment value. Respondent provides no basis in the record for associating additional expenses with Other Revenue. Mr. Ebersman testified that the finance team did not associate material expenses because they did not yet know the source of Other Revenue. We conclude that only the additional expenses associated with Other Revenue in the LRP should be excluded.

adjustment as necessary in his opening report in a footnote explaining: "Whether the expenditures were for acquisitions or capital expenditures, I assume that the assets acquired would benefit the business in the [ROW territory] and that the cost of acquiring them would therefore be shared under the [CSA]." But he excludes capital expenditures projected in the LRP in his computation of international cashflows. His projections for Facebook's entire enterprise (domestic and ROW territories together) were divided into income statement and cashflow items. Among the cashflow items he listed both capital and acquisition expenditures and also depreciation and amortization. By contrast, his projections for the "International Territory" listed income statement items and acquisition expenditures; no other cashflow items are shown (nor is there a separate section labeled cashflow items). Later in his opening report, in justifying his enterprise valuation "check" on key inputs (which we discuss below), he explained that after-tax operating profits were appropriate for measuring enterprise value but "the PCT payments are pre-tax values, which is the rationale for computing their present value by discounting pre-tax operating profit."

Dr. Newlon also explained that he did not need to deduct net investment expenditures (comprising capital expenditures, acquisition expenditures, and depreciation) from the cashflows in applying his income method for his enterprise value "check"

> because the assumption was that the cash flow differences between the [CSA] and the Services Alternative were entirely due to changes in which entity booked revenue from the [ROW territory] . . . . The assumption was that there would be no difference between the [CSA] and the Services Alternative in terms of which entities actually performed business functions and made any associated capital expenditures—the difference would be in how they were compensated for their functions and investments, not in which entities performed those functions or initially made those investments.

Finally, in criticizing petitioner's experts for failing to include acquisition expenditures, Dr. Newlon stated that he "assumed that those expenditures would be made to acquire assets that would contribute to the growth and maintenance of Facebook's business, and that they should therefore be taken into account as an economic cost when estimating the present value of arm's length PCT payments."

We cannot square Dr. Newlon's logic for including acquisition expenditures with his exclusion of capital expenditures. His inconsistent treatment suggests that this was a results-oriented adjustment in search of a rationale.

He also considered posttransaction evidence to determine his acquisition expenditure adjustment for years after 2013 (at least indirectly to compute his change in net investment factor). Using posttransaction evidence to check the reasonableness of a pretransaction assumption about an input into a valuation model may be permissible as we explained above. *See, e.g.*, *Estate of Gilford*, 88 T.C. at 52. But using posttransaction evidence itself as an input into a model to estimate value as of the transaction date is not.

Including a questionable adjustment that favors the taxpayer does not save it (or other flawed inputs). We conclude instead that Dr. Newlon included the acquisition expenditures so that his model would appear to produce a more balanced result.

b. *Discount rate*

The second key disputed income-method input is the discount rate for Facebook Ireland's participation in the actual CSA. To apply the specified income method we need discount rates for two "alternative" transactions: the actual CSA (the cost sharing alternative) and the hypothetical licensing alternative (the best realistic alternative). Under the actual CSA, Facebook Ireland committed to (1) funding its RAB share of the ongoing costs of the development of the cost shared intangibles in the CSA along with any associated funding risks, by making annual CST Payments (the funding activity), and (2) exploiting the cost-shared intangibles in the ROW territory, by marketing and selling ads, managing data, performing G&A services, and bearing the associated business risk in that territory (the exploiting activity). As explained above, the regulations label these two categories of commitments under the CSA cost contributions and operating cost contributions, respectively.

The purpose of the licensing alternative is to isolate the exploiting activity from the funding activity. The exploiting activity here is considered routine; therefore, it can be valued by reference to uncontrolled comparables which can be identified. By contrast, the funding activity is intended to develop nonroutine intangibles; it therefore is difficult to value because uncontrolled comparables rarely if

ever can be identified.[85] Under the licensing alternative, in contrast to the actual CSA, funding risks shift back to Facebook US as the hypothetical licensor, but the business risks associated with exploiting remain with Facebook Ireland as the hypothetical licensee.

The market-correlated risks of the actual CSA (funding and exploiting together) and the licensing alternative (exploiting alone) "may involve varying risk exposure and, thus, may be more reliably evaluated using different discount rates." Temp. Treas. Reg. § 1.482-7T(g)(2)(v)(B)(*1*). This is so because

> a party may have less risk as a licensee of intangibles needed in its operations, and so require a lower discount rate, than it would have by entering into a CSA to develop such intangibles, which may involve the party's assumption of additional risk in funding its cost contributions to the IDA.

Id. Neither party devoted much time to the discount rate for the licensing alternative (other than a brief discussion about unlevering). We likewise will address it when we discuss the licensing alternative in the next section. We instead will focus, as did the parties, on the discount rate for the actual CSA.

i. *Market-correlated risk*

The regulations state that "a discount rate or rates should be used that most reliably reflect the market-correlated risks of activities or transactions." *Id.* subdiv. (v)(A). "Normally, discount rates are most reliably determined by reference to market information." *Id.*

An appropriate discount rate reflects only market risk—the undiversifiable, systematic risk of the investment.[86] *See* Richard A.

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[85] Once isolated and valued, the NPV of these licensing payments is subtracted from the NPV of the actual CSA in computing the PCT Payment; the PCT Payor need not compensate the PCT Payee for the market value of the routine services it commits to perform because those are for exploiting the intangibles in the PCT Payee's territory for the PCT Payee's benefit (analogous to the operating cost contributions). *See* Temp. Treas. Reg. § 1.482-7T(a)(3)(iii) (requiring arm's-length compensation only for, e.g., cross operating contributions). See discussion *supra* Part IV.B.1 for the computation of the PCT Payment.

[86] The 2009 cost sharing regulations reflect this financial principle in their focus on "market-correlated risks" when determining a reliable discount rate. *See* Temp. Treas. Reg. § 1.482-7T(g)(2)(v)(A).

Brealey, Stewart C. Myers & Franklin Allen, *Principles of Corporate Finance* 213, 222, 224 (10th ed. 2011). Generally, systematic risks arise from economy-wide factors, such as business cycles or government policies, and not from factors specific to a particular company or investment opportunity; these are considered diversifiable idiosyncratic risks. *See id.* at 224.

The desirability of capturing diversifiable, idiosyncratic risk in projected cashflows, rather than in the discount rate, is discussed in *Principles of Corporate Finance*—a leading textbook that both parties' experts cite as authoritative. *See id.* at 213, 224–25 ("Diversifiable risk can affect project cash flows but does not increase the cost of capital."). Examples of diversifiable risks that can affect a project's cashflows but should not increase its cost of capital (discount rate) include the risk of a dry hole when prospecting for oil, or the risk "that new technology for a production line will fail to work, requiring expensive changes and repairs." *Id.* at 224. The probability of these possible outcomes should be captured in a balanced cashflow forecast that is the sum of the probability-weighted cashflows. *Id.* at 224–25. Sometimes, rather than follow this best practice to account for diversifiable risks, analysts increase the discount rate to offset them; this disfavored practice is referred to as adding "fudge factors" to the discount rate. *Id.*

A source of systematic risk for many public and private companies is generic business risk, which captures certain characteristics of the company. A classic example is the nature of the particular industry in which the company operates.

For private companies in particular, two main drivers of systematic risk have been observed: reliance on investor financing, and the need to deliver an exit event, such as an IPO, for investors to liquidate their investments. Because external financings and liquidity events are correlated with market conditions, the valuations of late-stage, VC-backed private companies are highly sensitive to changes in market conditions.

To derive the discount rate for converting Facebook's projections to present value, both parties estimate "the market-correlated risks," *see* Temp. Treas. Reg. § 1.482-7T(g)(2)(v)(A), of Facebook Ireland's participation in the CSA to be its WACC. The parties agree that, because Facebook had little to no debt in its capital structure, the WACC boils down to the cost of equity, and that the cost of equity can be estimated

using the CAPM.[87] They also agree on two of the three inputs into the CAPM—the risk-free rate of return (3.55%) and the equity risk premium (6.70%).[88] The third input needed to compute a discount rate, beta, is the issue.

ii. *Beta*

Beta "is a measure of the tendency of a security's price to respond to swings in the market." *Veritas*, 133 T.C. at 319. The market typically is estimated by reference to an index like the S&P 500. The beta of the S&P 500—the correlation of the market with itself—is one. If a company has a beta greater than one, its returns vary more than the market return. If its beta is less than one, its returns vary less than the market return.

The parties dispute how to estimate beta in a way that reliably reflects Facebook Ireland's systematic risk of participating in the CSA. This fight is familiar. *See, e.g.*, *Amazon I*, 148 T.C. at 184–86, 198 (applying CAPM, determining a beta of 2.0 for a public e-commerce company, and concluding that the discount rate was 18%); *Veritas*, 133 T.C. at 319, 324–26, 338–39 (applying CAPM, determining a beta of 1.935 for a public software company, and concluding that the discount rate was 20.47%).[89]

Facebook was not a publicly traded company as of the transaction date; therefore, its beta cannot be observed directly by comparing its stock's historical price movement to the market. *Cf. Amazon I*, 148 T.C. at 184–86, 198 (computing Amazon's beta in 2005 by looking to monthly

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[87] The CAPM equation is stated as follows: $r_e = r_f + \beta\,(r_m - r_f)$.

[88] The risk-free rate of return was estimated by reference to the yield on 20-year U.S. Treasury bonds in September 2010. The equity risk premium was estimated by reference to the long-horizon equity risk premium estimate from Ibbotson Associates.

[89] In *Amazon I*, 148 T.C. at 184–86, 198, the Court accepted application of CAPM using a beta of 2.0 computed using 2000 to 2004 monthly stock market data compiled by Bloomberg, and a WACC of roughly 18% as of January 1, 2005, but did not specify the risk-free rate used.

In *Veritas* the Court concluded that application of the CAPM using the 1926 to 1999 historic average equity risk premium of 8.1%, as reported by Ibbotson Associates, and a 1.935 company-specific beta to yield a WACC of 20.47% as of November 3, 1999, was reasonable, and it rejected an unspecified risk-free rate from the 20-year U.S. Treasury bond yield but did not indicate what risk-free rate was used. *Veritas*, 133 T.C. at 324–26, 338–39.

stock market data compiled by Bloomberg for 2000 through 2004 and noting that "Amazon was a very actively traded stock" and therefore these data points "were more than sufficient to compute Amazon's beta directly").

When beta itself cannot be observed directly, "[o]ften the characteristics of high- and low-beta assets can be." Brealey, Myers & Allen, *supra*, at 222.[90] Generally, "cyclical firms—firms whose revenues and earnings are strongly dependent on the state of the business cycle—tend to be high-beta firms." *Id*.

In estimating the discount rate for participating in the CSA, both parties' experts account for the fact that Facebook was a private company as of the transaction date. The parties' dispute centers on whether the relevant experts reliably account for the difference in systematic risk between private and public companies. Broadly, one group of experts starts with the betas of comparable public companies and then makes adjustments. This group includes Dr. Newlon, Mr. Saba, and Dr. Unni. Dr. Newlon and Mr. Saba derive a beta from public comparables and then add percentage premia. Dr. Unni adjusts the public comparable betas by applying a statistical regression analysis to account for firm maturity. Another group relies on academic literature that extracts beta from market data on VC-backed, private companies. This group includes petitioner's rebuttal experts Arthur Korteweg and Yael Hochberg.

iii. *Dr. Newlon's discount rate(s)*

Respondent, through Dr. Newlon, adopts a discount rate of 14.44% for Facebook Ireland's participation in the actual CSA and discount rates of 8.81% (ad sales and marketing), 8.31% (G&A services), and 9.63% (data center control) for the non-IDA functions that are valued under the licensing alternative. Respondent contends that Dr. Newlon reliably estimated the discount rate by first deriving a beta from comparable public companies (1.178) and then adding percentage premia totaling 3% to the resulting discount rate (of 11.44%) to account

[90] High-beta characteristics can be seen in "cyclical ventures," "projects with high fixed costs," and "projects that are sensitive to marketwide changes in the discount rate." *See* Brealey, Myers & Allen, *supra*, at 224.

for Facebook Ireland's private, pre-IPO status and the earlier stage of monetization in the ROW territory.[91]

Petitioner counters that Dr. Newlon arbitrarily adjusted public company comparables. Petitioner contends that the 2.36 beta that Dr. Korteweg determined is the most reliable beta because it was derived from data that provides the most reliable, direct evidence of beta for a late-stage, VC-backed private company as of the transaction date. Using this 2.36 beta in the CAPM, Dr. Hochberg calculates a discount rate of 19.36%, which petitioner adopts as its primary position. Petitioner alternatively adopts Dr. Unni's discount rate analysis. Dr. Unni derived his opening report beta of 2.04 by applying a statistical regression analysis to a set of technology-intensive public companies (including Google, Yahoo!, eBay, Tencent, and Expedia) to account for his conclusion that beta would decline relative to the companies' maturity.[92]

We find that Dr. Newlon's discount rate is not a reliable reflection of the market-correlated risks of participating in the actual CSA because he failed to provide empirical support for his selected percentage premia (2% for its pre-IPO stage and 1% for its early monetization stage).

It is not necessarily unreasonable to compute a private company discount rate by deriving a beta from public-company comparables and then making adjustments to reflect the company's private status. *See, e.g.*, *Furman v. Commissioner*, T.C. Memo. 1998-157, 1998 WL 209265, at *11 (calculating beta for a closely held corporation using betas of comparable public companies). Some of petitioner's experts use this approach, and one (Timothy Luehrman) acknowledged that adjusting public-company comparables is "a standard technique" for estimating the beta of a private company. And Dr. Unni's opening report does just this. Petitioner argues Dr. Newlon's adjustments are per se unreasonable because the percentage premia are "fudge factors" and

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[91] The initial discount rate from the public-company-derived beta is 11.44% (3.55% + (1.178*6.7%) = 11.44%). Adding Dr. Newlon's percentage premia (2% and 1%) results in his final discount rate of 14.44%. Dr. Newlon's final discount rate, after the addition of his premia, implies a beta of 1.625, computed by subtracting the risk free rate (3.55%) from 14.44% and then dividing the result (10.89%) by the equity risk premium of 6.7%.

[92] At trial we excluded testimony from Dr. Unni in support of his regression analysis that relied in part on an article: Ludwig B. Chincarini et al., *Beta and Firm Age*, 58 J. Empirical Fin. 50 (2020). Because we ultimately do not adopt Dr. Unni's regression analysis (irrespective of the support he tries to marshal for it), we consider petitioner's renewed objection moot.

that Dr. Unni's adjustment using a statistical regression analysis is not "fudged."

The parties agree that the reasons for Dr. Newlon's adjustments are supported by financial literature. We likewise conclude that the discount rate should attempt to capture the risk of Facebook's private-company status and the relative immaturity of the ROW territory market. Those factors reflect systematic risk, not idiosyncratic risk that should be accounted for by adjusting financial projections.

Our problem rather is with the size of Dr. Newlon's premia. He relied on his judgment alone to arrive at the percentages, and respondent asks us to do the same. Dr. Newlon began his pre-IPO premium analysis by citing an empirical source for a VC premium—Metrick & Yasuda, *supra*, at 76, 79. He stated that Metrick & Yasuda "found an estimated premium of the average cost of capital for venture capital over the cost of capital for a typical firm with shares traded on a public exchange of between 3.1 and 5.6 percentage points," but he ends at 2%. He gives numerous reasons for his 2% conclusion that we can summarize as his judgment that an investment in pre-IPO Facebook stock was less risky and less illiquid because in 2010 Facebook already was growing rapidly, was profitable, and was planning for an IPO of its stock. His second adjustment of 1%, to account for Facebook Ireland's ROW territory being at an earlier monetization stage, also was based on his judgment, without reference to any underlying source.

Dr. Newlon characterized his 3% aggregate premia adjustment as generous, and respondent calls it conservative given Facebook's successful business model that already dominated markets in the ROW territory. This rosy view of the facts downplays the risks facing Facebook (namely, that it had just started monetizing the ROW territory, and advertisers were churning as the LRP noted).

Nor do we find convincing Dr. Newlon's assertion that Facebook Ireland's lack of capacity to assume substantial risk (in his opinion) undermines the need for any risk premium, let alone the 3% he adopted. Respondent does not cite any legal authority for his claim, nor could he. The argument that we should take into account the pre-CSA capacity of a CSA participant when we estimate the systematic risk of the investment it would make in the CSA contradicts the premise of cost sharing as articulated in the regulations. It amounts to nothing more than a resurrection of the no-deal scenario that we rejected in *Amazon I*, 148 T.C. at 159–61.

Respondent also points out that Dr. Newlon's lopping off of approximately 1% from Metrick & Yasuda's VC premium is offset by his addition of 1% to account for early monetization. This argument does little to dispel our impression that Dr. Newlon's discount rate is a product of subjective manipulation of percentage premia.

In sum, Dr. Newlon's discount rate does not "reliably reflect the market-correlated risks" of participating in the CSA because it captures the systematic risk of a private company in an unsupported manner. *See* Temp. Treas. Reg. § 1.482-7T(g)(2)(v)(A).

iv. *Petitioner's proposed beta*

Another approach to estimating the beta of a late-stage, VC-backed private company is to "directly use the returns to [that portfolio company], computed between financing rounds or from financing round until exit, to estimate risk [(beta)] and return [(alpha)]." Arthur Korteweg, *Risk Adjustment in Private Equity Returns*, 11 Ann. Rev. Fin. Econ. 131, 145 (2019). Petitioner proposes this alternative, adopting a paper on the topic by two of the experts testifying in this case: Arthur Korteweg & Morten Sorensen, *Risk and Return Characteristics of Venture Capital-Backed Entrepreneurial Companies*, 23 Rev. Fin. Stud. 3738 (2010) (Korteweg & Sorensen).

To estimate Facebook's beta, Dr. Korteweg started with the beta of 2.51 determined in Korteweg & Sorensen for late-stage, VC-backed private companies. Dr. Korteweg adjusted this starting beta to account for the impact of an option pricing model offered by Dr. Strebulaev, one of respondent's experts. Using Dr. Strebulaev's methodology Dr. Korteweg estimated Facebook's beta to be 2.36 as of the transaction date. Dr. Hochberg then used Dr. Korteweg's beta of 2.36 to estimate Facebook's discount rate to be 19.36%.[93]

The Korteweg & Sorensen paper used a sample that accounts for two main systematic risks of late-stage, VC-backed private companies: funding risk and exit event risk. Respondent argues that Facebook was cashflow positive and therefore was not reliant on external funding, in contrast to other late-stage VC-backed private companies in Dr. Korteweg's dataset. And he contends that exit event risk was minimal because Facebook's IPO was eagerly anticipated as of the transaction date; investors thus would view the need for an exit as an opportunity,

[93] Mathematically, 3.55% + (2.36*6.7%) = 19.36%.

not a risk. Of course, positive cashflows and anticipated IPOs do not obviate the need for further funding or eliminate the risks associated with accessing the market. Indeed, respondent's own expert Dr. Newlon also made a pre-IPO adjustment.

Dr. Korteweg's analysis also is supported by the work of Dr. Strebulaev. In a 2016 paper, Dr. Strebulaev and his coauthors estimated a 2.297 beta for late-stage private company investments that covered 1992 through 2014. *See* Michael Ewens, Matthew Rhodes-Kropf & Ilya Strebulaev, *Insider Financing and Venture Capital Returns* 46 tbl.7 (Stanford Univ. Graduate Sch. of Bus., Working Paper No. 16-45, 2016). The paper states that the 2.297 beta "is reassuringly similar to that reported in Korteweg and Sorensen (2010), which provides evidence that we capture the average correlations found in earlier work." *Id.* at 21.

Respondent flags two issues with Dr. Korteweg's analysis that give us pause, however. First, the dataset Dr. Korteweg used covers 1987 through 2005. This period includes numerous economic cycles; therefore, it represents the systematic risk associated with a long-term investment. But it did not include the years leading up to the transaction, 2006 through 2010. And Dr. Korteweg's reasons for excluding this data did not persuade us that this omission was insignificant.[94] The dataset also uses a large sample of late-stage, VC-backed private companies across different industries. For example, it includes Build-A-Bear Workshop, a company that is not comparable to Facebook in size or industry. Nonetheless, Dr. Korteweg stated he would use the same 2.36 beta to determine the discount rate for Build-A-Bear Workshop to reflect its late-stage private status. Despite these flaws, Dr. Korteweg's approach does capture the main systematic risks concerning private companies (e.g., sensitivity to movements in the market discount rate due to fluctuations in interest rates) and gives us some direction; at the least it supports our conclusion that Dr. Newlon's 14.44% discount rate (with its implied beta of 1.625) is too low.[95]

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[94] We understood that the dataset they used did not include these years. However it was unclear whether they could not get data for the additional years or did not want to pay for those years. The explanation for excluding those years offered at trial seemed more of an excuse than a rationale.

[95] Petitioner moved to strike a portion of respondent's posttrial reply brief that relies upon one of Dr. Korteweg's papers discussing the average beta for venture capital funds: Arthur Korteweg & Stefan Nagel, *Risk-Adjusted Returns of Private Equity Funds: A New Approach* (July 8, 2022). Respondent did not offer it into evidence

We conclude that Dr. Newlon's discount rate underestimates Facebook Ireland's systematic risk of participating in the actual CSA. We also are concerned that Dr. Korteweg's discount rate does not accurately reflect that systematic risk given the dataset's limitations and the novelty of the analysis. We now must choose the discount rate that the record before us suggests would most closely reflect Facebook Ireland's systematic risk of participating in the actual CSA.

v. *Our discount rate options*

The tables below list the main discount rate options we have in the record (listing first those offered by petitioner's experts, then respondent's experts, and finally the roughly contemporaneous discount rates appearing in stipulated exhibits).

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and never asked us to take judicial notice, it was published after Dr. Korteweg testified at trial (and after all expert reports were submitted), and it was not discussed by any expert at trial. *See* Rule 52. Consequently, we will not consider it in our analysis and will grant petitioner's Motion to Strike.

Petitioner's experts	*Beta*	*Discount Rate(s)*	*Comments*
Dr. Hochberg	2.36 (unlevered)	19.36%	Dr. Hochberg relied on Dr. Korteweg's beta. She opined that the public-company-derived betas Dr. Newlon and Mr. Saba used were flawed.
Dr. Korteweg	2.36 (unlevered)	none	Dr. Korteweg started with a 2.51 beta from Korteweg & Sorensen for late-stage, VC-backed private companies. He then reduced that beta by 5.8% to account for Dr. Strebulaev's option pricing model. He did not compute a discount rate.
Dr. Luehrman	1.17 (Facebook US), 1.57/1.59 (entire enterprise) (unlevered)	16.5%–17% (Facebook Ireland)	Dr. Luehrman calculated discount rates for Facebook US (using comparable company benchmarks) and the entire enterprise (using comparable company benchmarks and the LRP) and then derived a range of discount rates for Facebook Ireland. He used a 3.87% risk-free rate and 6% equity risk premium.
Dr. Reichert	1.24	16.28%	In his opening report Dr. Reichert started with betas from comparable public companies KPMG used in its section 409A valuation and added comparables. He used a risk-free rate of 3.87%, equity risk premium of 6.7%, country risk premium of 1.63%, and an illiquidity premium.
	1.32 (unlevered)	16.91%	In his rebuttal report Dr. Reichert modified his discount rate calculation to use "net debt" rather than "total debt" to determine the unlevered beta.
Dr. Unni	2.04 (levered)	17.22%	In his opening report Dr. Unni started by identifying the betas of tech-intensive, public companies (including Google, Yahoo!, eBay, Tencent, and Expedia) and applied a statistical regression analysis to account for the commercial maturity of these companies compared to Facebook.
	2.23 (unlevered)	18.49%	In his rebuttal report, after reviewing Dr. Luehrman's opening report, Dr. Unni "unlevered" to adjust for significant cash balances held by tech firms in the dataset (the beta of cash holdings is zero because investments in cash are free from systematic risks from market-wide risk factors).
	2.459 (2.333–2.679) (unlevered)	20.03% (19.18%–21.50%)	At trial Dr. Unni applied Dr. Strebulaev's one-way fixed effects model to the unlevered betas from his rebuttal to control for the identity of the company (but not the two-way fixed effects model which controls for identity and time).

Respondent's experts	*Beta*	*Discount Rate(s)*	*Comments*
Dr. Newlon	1.178	14.44%	Dr. Newlon derived beta from a subset of 8 comparable U.S. publicly traded companies (taken from 16 comparables) and then added percentage premia to the resulting 11.44% discount rate to account for Facebook Ireland's private status (2%) and earlier stage of monetization (1%). He did not unlever to adjust for cash and debt.
	—	17.47% (unlevered)	At trial Dr. Newlon applied Dr. Hochberg's modifications as she applied them to compute unlevered discount rates (i.e., only to international cashflows and the subset of 8 comparables). He then applied her modifications to unlever the discount rates for the services alternative comparables: 10.39% (sales and marketing), 12.39% (data center), 11.22% (G&A). And he then applied her modifications to unlever the full set of 16 comparables for international cashflows and the comparables for his services alternative: 14.85% (international), 10.39% (sales and marketing), 12.39% (data center), 11.22% (G&A).
Mr. Saba	1.31 (levered)	19%	Mr. Saba considered 11 companies as comparables but selected a beta similar to Amazon's, Tencent's, and Baidu's. He used a modified CAPM with a risk-free rate of 3.6% and equity risk premium of 6.0%, to which he added a 6% company-specific risk premium and a 1.3% country-specific risk premium. He rounded to 19% for cost of equity and WACC (for the international segment).
Dr. Strebulaev	2.297	none	Dr. Strebulaev did not compute a Facebook-specific beta or discount rate in his opening or rebuttal reports. Petitioner offers a beta for late-stage private company investments from his 2016 paper, Ewens, Rhodes-Kropf & Strebulaev, *supra*, at 46 tbl.7, which considers 1992–2014 data. In his paper he pointed to Korteweg & Sorensen for support. Although he did not compute a discount rate, using a beta of 2.297, a risk-free rate of 3.55%, and an equity risk premium of 6.7% results in an 18.94% discount rate.

Contemporaneous valuations	*Beta*	*Discount Rate(s)*	*Comments*
EY	—	17.7%	For transfer pricing documentation, EY started with KPMG's 17% WACC calculation to which it added a 0.7% international risk premium.
KPMG	1.24 ("re-levered")	17%	KPMG calculated a WACC for Facebook's section 409A valuation (encompassing Facebook's entire enterprise value). KPMG calculated beta using public companies including Google, Yahoo!, Amazon, Tencent Holdings, Mixi, and Baidu, to which it added a "specific risk premium" of 6%.
LRP	—	12.5%, 15%, 17.5%	On various charts showing illustrative valuation ranges for DCF, the LRP used three discount rates.

The tables show the range of betas and discount rates in the record and give some direction to our analysis of an appropriate beta and discount rate to reflect Facebook Ireland's market-correlated risks of participating in the CSA. The record before us supports some increase over a public company beta but less clarity regarding how to derive that beta. The average of Dr. Newlon's implied beta of 1.625 and Dr. Korteweg's beta of 2.36 is 1.99. For purposes of our analysis, we will round it to a beta of 2.0, which results in a discount rate of 16.95%.[96] This average beta is close to the beta of 2.04 in Dr. Unni's opening report, and the resulting discount rate there of 17.22%.

The 2.297 beta in the paper by Dr. Strebulaev, a witness we found credible and helpful, results in a discount rate of 18.94% (using the risk-free rate of 3.55% and equity risk premium of 6.7%).[97] The paper was admitted as an Exhibit, but Dr. Strebulaev was not asked about it at trial and did not adopt it or any discount rate or beta in his testimony. (Dr. Sorensen, respondent's rebuttal expert, and Dr. Korteweg, petitioner's rebuttal expert, were asked about the paper.)

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[96] This is computed by adding the 3.55% risk-free rate to the product of the 6.7% equity risk premium and beta of 2.0, that is, 3.55% + (2.0*6.7%) = 16.95%.

[97] Mathematically, 3.55% + (2.297*6.7%) = 18.94%.

In his rebuttal report Dr. Unni offered a beta of 2.23 and resulting discount rate of 18.49% after "unlevering" to account for zero beta cash holdings (increasing his chosen discount rate). We are mindful of respondent's criticism of Dr. Unni's regression analysis as novel, but the goal of that analysis—to adjust for the relative age of the companies in the sample—has support in the record. And his sample companies included some of the same companies as Dr. Newlon's (and some of the companies that the LRP cited as benchmarks). We are not comfortable with adjusting for cash holdings, however. The experts seemed to agree that adjustments should be limited to *excess* cash, but no expert made that adjustment. Unlevering results in a higher discount rate so rejecting it necessarily means that the unlevered discount rate of 18.49% is too high. We therefore are fishing through the record for an appropriate discount rate between 16.95% and 18.49%.

We could take the midpoint between 16.95% and 18.49%. That midpoint is 17.72%. This is almost identical to the rate that Facebook adopted in its transfer pricing documentation—that is, the 17.7% discount rate (WACC) in EY's analysis. This rate was not adopted by any expert, so it was not subjected to the same scrutiny although it was criticized.[98] Nor is it without some of the flaws we identified above in our discussion of Dr. Newlon's discount rate and petitioner's alternatives: KPMG started with a public company beta to which it added a "specific risk premium" of 6% to reflect forecast risk (which is frowned upon) to which EY added a 0.7% international risk premium (similar to Dr. Newlon's 1% international premium). But it was petitioner's original return position (which we could treat as a concession),[99] falls squarely within the range of discount rates offered by the experts, and accommodates our concerns about the extremes offered by each party. Balancing the weaknesses of each party's primary position, and mindful that valuation is not a precise science, but a question of fact to be resolved on the basis of the entire record, *see, e.g.*, *Kaplan v. Commissioner*, 43 T.C. 663, 665 (1965), we therefore adopt a discount rate of 17.7% for valuing the actual CSA.

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[98] In particular, Dr. Newlon argued that EY's projections were much more pessimistic than KPMG's, so EY should not have used KPMG's 17% discount rate, which already embedded a "forecast risk" premium.

[99] *See Purple Heart Patient Ctr., Inc. v. Commissioner*, T.C. Memo. 2021-38, at *41 (explaining that statements made on a return are generally binding admissions unless "cogent evidence" indicates otherwise (quoting *Kornhauser v. Commissioner*, T.C. Memo. 2013-230, at *5, *aff'd*, 632 F. App'x 421 (9th Cir. 2016))).

c. *Best realistic alternative*

The third key income-method input disputed by the parties is the comparable for the revenue that Facebook Ireland, the PCT Payor, would receive under its "best realistic alternative to entering into a CSA." Temp. Treas. Reg. § 1.482-7T(g)(4)(i)(A). Under the regulations, the best realistic alternative generally is a "licensing alternative . . . derived on the basis of a functional and risk analysis of the cost sharing alternative [(the actual CSA)], but with a shift of the risk of cost contributions to the licensor." *Id.* subdiv. (i)(C). In a hypothetical licensing alternative, Facebook US, as the PCT Payee, would act as the uncontrolled licensor, and Facebook Ireland would perform the same ad sales and other functions and bear the same risks associated with exploiting the cost shared intangibles that it committed to perform under the actual CSA.

In evaluating the best realistic alternative under the income method the parties do not dispute that under the actual CSA, Facebook Ireland committed to make, and did make, significant operating cost contributions—namely, bearing the costs associated with performing the ad sales and marketing, G&A, and data center functions in the ROW territory, and bearing the risk associated with those functions. They agree that Facebook Ireland must be given a return for these routine, benchmarkable functions. And they generally agree on the appropriate returns for all functions other than how to price Facebook Ireland's commitment to market and sell ads in the ROW territory and bear the associated risk (the exploiting activity).[100]

Treas. Reg. § 1.482-1(c)(2) explains that the two main factors to consider to determine which method provides the most reliable measure are (1) the degree of comparability between the controlled transaction and any uncontrolled comparables and (2) the quality of data and assumptions in the analysis. To ascertain the degree of comparability we look to five factors: (1) functions performed and types of assets and intangibles used, (2) significant contractual terms, (3) significant risks such as market, credit, and collection risks, (4) significant economic conditions, such as geographic market, position within the market, and extent of competition in the market, and (5) property or services

[100] Petitioner notes that the routine returns that Dr. Unni identified for data center and G&A do not differ materially from Dr. Newlon's; respondent agrees but points out that the discount rates for these returns do differ.

transferred in the transaction, including intangibles embedded in the tangible property or service. *Id.* para. (d)(1), (3).

The income method specifies that comparables are "derived on the basis of a functional and risk analysis of the cost sharing alternative," which is the actual CSA. Temp. Treas. Reg. § 1.482-7T(g)(4)(i)(C). Under the actual CSA, Facebook Ireland committed to perform ad sales and marketing functions and to bear the associated risk.

i. *Dr. Newlon's cost-plus markup for Facebook Ireland's ad sales and marketing contribution*

Respondent, through Dr. Newlon, contends that cost-plus-8% is an arm's-length return for Facebook Ireland's commitment to market and sell ads and bear associated risk in the ROW territory. Dr. Newlon began with a CPM analysis that used the profit levels of advertising agencies as comparable to Facebook Ireland's commitment to market and sell ads and bear associated risk in the ROW territory. His CPM estimated a median return of cost-plus-13.9%. He then rejected his CPM in favor of the cost-plus-8% markup from Facebook's pre-CSA SMSAs, claiming that it was an arm's-length return for Facebook Ireland's licensing alternative.[101] Dr. Newlon failed to apply the income method because he used a controlled agreement as an uncontrolled comparable instead of analyzing the actual CSA and the functions and risks that Facebook Ireland committed to perform under it.

Neither Dr. Newlon nor respondent explained how the SMSAs between Facebook Ireland and the FB Foreign Sales Affiliates provide a comparable that reflects these functions and risks. They did not compare the risks assumed by the FB Foreign Sales Affiliates under the SMSAs to the risks Facebook Ireland assumed under the CSA. Under the SMSAs, the FB Foreign Sales Affiliates sold ads on a risk-insulated basis (guaranteed a fixed return on their costs). By contrast, under the CSA, Facebook Ireland bore the exploitation risk of ad sales and marketing in the ROW territory. Ignoring the provisions of the income method, Dr. Newlon did not respect the allocation of functions and risks under the CSA.

[101] Because the regulations use the term "licensing alternative" we will use that in lieu of "services," which Dr. Newlon used; the label does not change the analysis.

Dr. Newlon tried to justify using these pre-CSA contracts with his "no deal" alternative.[102] He posited that, because Facebook Ireland by itself could not generate the ROW territory profits that would arise from cost sharing, entering into a CSA with Facebook Ireland was a "heads-you-win, tails-I-lose proposition" for Facebook US. He thus hypothesized a world where Facebook US and Facebook Ireland did not engage in a CSA.

Dr. Newlon rejected petitioner's characterization of his alternative as a "no deal" alternative, but it infused his valuation analysis. Respondent and Dr. Newlon repeatedly contended that, as of the transaction date, Facebook Ireland still had relatively little capital of its own, and therefore it did not have the capacity to bear a significant portion of the risks associated with either the development or the exploitation of the cost shared intangibles; only Facebook US had that capacity. This analysis renders all CSAs between a parent and a new subsidiary pointless. The "truism" that "[w]henever related parties enter into a [CSA], they presumably have the 'realistic alternative' of not entering into a [CSA]," *Amazon I*, 148 T.C. at 160, remains true.

Under the 2009 cost sharing regulations, that a participant might not be able to bear certain risks before entering into the CSA is not relevant to the analysis of whether an arrangement is a CSA under Temp. Treas. Reg. § 1.482-7T(b). The regulations ask what each participant contributes initially; that is the point at which they consider pre-existing capabilities. They then allocate the ongoing costs of the CSA according to each participant's RAB share looking forward, not looking backward at the participant's pre-existing capabilities. Respondent does not contest that Facebook Ireland complied with the regulations by committing to share the costs and risks of developing cost shared intangibles in proportion to its RAB share and to fund its costs of exploiting those intangibles in the ROW territory. Whether Facebook Ireland could bear the risk before the CSA is irrelevant. The question asked by the regulations is what discount rate is appropriate for the risk Facebook Ireland agreed to bear under the CSA. Dr. Newlon did not respect the allocation of functions and risks under the CSA, essentially ignoring the requirements of the income method in the regulations.

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[102] As explained by Dr. Newlon at trial: "The no deal alternative that I discuss in my opening report was not something I used in my application of the income method. It was a way to evaluate, basically, the bargaining position of Facebook US and [Facebook Ireland]."

Dr. Newlon's "no deal" construct also violates Treas. Reg. § 1.482-1(f) by restructuring the actual transaction. *See Amazon I*, 148 T.C. at 159–61; *Veritas*, 133 T.C. at 321 n.29.[103] Respondent states that Facebook Ireland lacked the capacity to bear any significant portion of the risks it committed to bear under the CSA. But respondent does not invoke *Moline Properties, Inc. v. Commissioner*, 319 U.S. 436 (1943), or any other rule for disregarding Facebook Ireland's corporate separateness. Respondent does not argue that the transaction or any entity lacked economic substance. Nor does he dispute that under the CSA, Facebook Ireland committed to bear the risks of intangible development and exploitation in the ROW territory.

The CSA and the licensing alternative are different from Dr. Newlon's "no deal" alternative. Under the CSA, Facebook Ireland pays for the cost-shared intangibles with the PCT Payment and cost contributions and pays for exploiting those intangibles with the operating contributions and operating cost contributions. Under the licensing alternative, Facebook Ireland continues to make the operating and operating cost contributions to exploit the intangibles it hypothetically licenses. But under Dr. Newlon's "no deal" alternative, Facebook Ireland is compensated on a cost-plus basis and therefore is insulated from entrepreneurial risks associated with exploiting those intangibles.

Respondent attempts to bolster Dr. Newlon's position by using Facebook's statements to the ATO as a "gotcha."[104] In doing so, respondent, like Dr. Newlon, again ignores the fact that under the CSA Facebook Ireland committed to bear entrepreneurial risk in the ROW territory after the transaction date. By contrast, Facebook Australia, like other FB Foreign Sales Affiliates, was guaranteed an 8% return on its costs and was insulated from the risk of any losses, because it was compensated on a cost-plus basis. Before the CSA, Facebook US made that guaranty to Facebook Australia. And after the CSA, Facebook Ireland made that guaranty. Facebook's position in front of the ATO

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[103] The realistic alternatives principle under Treas. Reg. § 1.482-1(f)(2)(ii) states that the actual transaction will not be restructured unless it lacks economic substance. The income method's specific application of the realistic alternatives principle respects the allocation of risks under the CSA and looks to uncontrolled comparables to price it. Temp. Treas. Reg. § 1.482-7T(g)(4)(i); *see also* Treas. Reg. § 1.482-1(f)(2)(ii).

[104] Namely, respondent points out that Facebook represented to the ATO that the 8% cost-plus compensation was appropriate.

therefore is consistent with the particular roles and risks assumed by Facebook Ireland (risk-exposed) and Facebook Australia (risk-insulated).

In sum, Dr. Newlon's cost-plus-8% return did not reflect a best realistic alternative to the CSA as defined by the income method (i.e., based on hypothetical uncontrolled licenses with the same risks relating to exploiting the intangibles, here, the ad sales and marketing activities). He did not explain how the pre-CSA controlled transactions with affiliates insulated from risk are comparable to the risks under the CSA relating to the exploitation of the intangibles (separate from funding their development).

Dr. Newlon's CPM analysis on the other hand considered four advertising holding companies and one marketing services company to be appropriate comparables. He concluded that this set of companies had a median cost-plus markup of 13.9%, with an interquartile range of 6.8% to 14.2%. He stated that an 8% markup on costs was consistent with his CPM analysis. The flaw in his generalization is evident. A CPM analysis that produces a median cost-plus-13.9% markup does not justify a cost-plus-8% markup.

Rejecting Dr. Newlon's cost-plus-8% markup, we now must consider whether his CPM analysis is more reliable than the Reseller-based alternative urged by petitioner. *See* Temp. Treas. Reg. § 1.482-7T(g)(4)(v)(D) ("If the licensing alternative is evaluated using the comparable profits method, as described in paragraph (g)(4)(iii)(B) of this section, any additional comparability and reliability considerations stated in § 1.482-5(c) may apply."). Respondent in his Reply Brief acknowledges that a 13.9% markup on costs is permissible. We turn next to petitioner's alternative revenue-based commission.

ii. *Dr. Unni's 21.3% Reseller commission*

Dr. Unni ultimately adopted an adjusted Reseller commission of 21.3% on revenue, which petitioner contends represents an arm's-length return. He computed this by multiplying the following two variables: (1) the revenue-based commission that Facebook paid to Resellers under the NAAs (30%), which petitioner offers as an internal CUSP under

Treas. Reg. § 1.482-9,[105] and (2) the portion of Facebook's ads revenue that was "managed" as of the transaction date (71%).

We agree with petitioner that the functions performed by Dr. Newlon's comparables are not directly comparable to those performed by Facebook's ad sales team. But the same criticism can be leveled at petitioner's use of Resellers as comparables. Considering the factors that will have "the greatest effects on comparability under [the CUSP]," *see id.* para. (c)(2)(ii), we conclude that the services performed by the Resellers differed from those provided by Facebook's ad sales team.

Resellers were selling to select large advertisers through IOs with minimum thresholds; therefore, they more closely resembled Facebook's DSO. But Facebook's DSO also managed advertisers who used Ads Manager, seeking to retain them and increase their spending, as did the ISO and OSO. While Facebook may have viewed Resellers as a substitute for its international ad sales team by giving it an early presence in its lowest priority markets, they were not a substitute for its entire ad sales organization which included the DSO, ISO, and OSO. Petitioner did not analyze the Reseller services; nor did a Reseller testify about the services it provided. And the intangible property that Resellers used differed materially from what Facebook's ad sales team had at its disposal, namely Ads Manager. All of the advertisers served by the ISO and OSO and a growing number of DSO advertisers could and did use Ads Manager. Resellers were limited in whom they could target for ad sales and how they could sell and they did not get credit for ads placed through Ads Manager. By design, they operated in low-monetization markets. Dr. Unni's CUSP analysis fares no better than Dr. Newlon's cost-plus analysis when measured against the regulations.

Setting aside the comparability problem, we also find fault with Dr. Unni's derivation of his final number (the 21.3% commission that he adopted at trial). In particular, the record establishes that a higher proportion of advertisers were not receiving the same level of service that was provided by Resellers, and more advertisers were migrating

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[105] Dr. Unni's CUSP method is similar to the CUT method cited in Temp. Treas. Reg. § 1.482-7T(g)(4)(iii)(A) but is specific to services transactions. It is used to determine "whether the amount charged in a controlled services transaction is arm's length by reference to the amount charged in a comparable uncontrolled services transaction." Treas. Reg. § 1.482-9(c)(1). It highlights similarity of the services rendered (including contractual terms), and of the intangible property (if any) used in performing the services, as generally having the greatest effects on comparability. *Id.* subpara. (2)(ii).

toward Ads Manager. Accounts managed by the ISO and OSO (a significant portion of Dr. Unni's 71% managed accounts), received a lighter touch than accounts managed by the DSO, as Dr. Lambrecht's chart *supra* Findings of Fact Part I.B.1.a demonstrates. Dr. Unni's 21.3% commission rate does not adjust for this lighter touch.

Dr. Unni testified that a 15% commission might be a "useful approximation" for a "lower level of intermediate selling effort." Petitioner on brief equates Dr. Unni's 21.3% commission to a 21% cost-plus markup. And it equates a 13.9% markup to a commission rate of 17.873% (assuming a 20.03% discount rate). As the record shows that 21.3% commission is too high, a reduction to 17.873% seems reasonable. Faced again with two flawed competing expert opinions, we will choose the one we think is more reasonable (less flawed). On the record before us, we conclude that a 13.9% cost-plus markup is reasonable.[106] This at least takes into account the entrepreneurial risk that Facebook Ireland would assume in a hypothetical licensing alternative; while Dr. Newlon's advertising and marketing agencies were not in the same business, they did assume entrepreneurial risk relating to ad sales and marketing.

We also must select a companion discount rate for the licensing alternative. Dr. Unni adopted a 17% discount rate for ad sales and marketing returns to match his Reseller commission rate, but we already rejected his methodology. Petitioner did not criticize Dr. Newlon's ad sales and marketing discount rate separately. Indeed, the discussion in the record focused on unlevering all of the discount rates if we unlever the discount rate for the actual CSA, which we concluded was not appropriate on this record. We reject unlevering of the licensing alternative discount rate for the same reason. Therefore, we adopt Dr. Newlon's ad sales and marketing discount rate of 8.81%.

Finally, neither party spent time on the other functions that still would be performed by Facebook Ireland under the licensing alternative (G&A and data center) (other than a disagreement about associated

[106] One also might conclude that when Facebook moves a market to its own ad sales team, Facebook has concluded that it would be cheaper than the 30% commission paid to Resellers.

discount rates). We therefore adopt Dr. Newlon's inputs (returns and discount rates) for those as well.[107]

d. *Respondent's corroboration test*

We now turn to respondent's argument that we can confirm the reliability of Dr. Newlon's key income-method inputs by running a "test" that uses them to value the entire Facebook business enterprise as of the transaction date. Respondent implies Facebook's enterprise value from private secondary-market transactions in Facebook's stock (from an interpolated value computed by Dr. Strebulaev), from Facebook's section 409A valuation reports, and from external investments in Facebook's equity. Because Dr. Newlon's income-method inputs produce a global enterprise value that is consistent with Facebook's implied global enterprise value from secondary market transactions, according to respondent, they are more reliable than petitioner's. Respondent does not explain where his implied-enterprise-value "test" fits under the 2009 cost sharing regulations. The only legal support that respondent offers is a general reference to the arm's-length standard. *See* Treas. Reg. § 1.482-1(d)(1).[108]

Neither party seeks to apply the market capitalization method in Temp. Treas. Reg. § 1.482-7T(g)(6). Respondent, through Dr. Newlon, ruled the market capitalization method out because Facebook's stock was not regularly traded on an established securities market. *Id.* Respondent does not apply the CUT method in Temp. Treas. Reg. § 1.482-7T(g)(3) or otherwise explain how enterprise values implied from secondary-market sales of Facebook's equity and investments in Facebook's common stock could constitute "results that would have been realized if uncontrolled taxpayers had engaged in the same transaction under the same circumstances." *See* Treas. Reg. § 1.482-1(b)(1).

At trial the parties spent some time on the concepts of intrinsic value and market value. Respondent offered no evidence to establish that Facebook's market value was its intrinsic value (or what relation

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[107] Adopting Dr. Newlon's discount rates favors petitioner by producing a lower NPV for the PCT Payment. Because his discount rates were lower than Dr. Unni's, they result in a higher NPV for the licensing alternative that then is subtracted from the NPV of the actual CSA to compute the NPV for the PCT Payment.

[108] Curiously, respondent does not cite Treas. Reg. § 1.482-1(c)(2)(iii), which specifically addresses the confirmation of results by another method.

its market value had to financial projections of its future revenue).[109] A DCF model may or may not derive a market value but is supposed to derive intrinsic value (so long as the inputs are sound). And it does not take an expert to discern from the history of the stock market that publicly traded stock values often diverge from intrinsic values. Thus we draw no conclusions from the comparison to the market valuations used by respondent, and need not address alleged limitations of those valuations that petitioner highlights (the lack of short selling and the like).

Respondent's market corroboration test conveniently supports his expert, but it amounts to an end run around his regulations. The income method in his regulations mandates the selection of the inputs set out in those regulations that in turn produce a value for the payment(s) required to compensate the CSA participants. *See* Temp. Treas. Reg. § 1.482-7T(g)(4). The income method does not depend on or refer to the market capitalization method. *Id.*

e. *Conclusion: arm's-length result*

Respondent reaches an unreasonable result because he implements the income method in an unreasonable manner by adopting unreliable inputs. *See Coca-Cola*, 155 T.C. at 203 ("In order to show that the Commissioner has reached an unreasonable result . . . the taxpayer may show that the Commissioner implemented his methodology in an unreasonable manner, e.g., by employing erroneous assumptions, incorrect data, or an analysis that is internally inconsistent."). Dr. Newlon adopted the general income-method framework in the first two sentences of paragraph (g)(4)(i)(A) (comparing a "cost sharing alternative" to a "best realistic alternative"). But he stopped there. He did not apply the income method's definition of "cost sharing alternative." And he did not analyze how his "Cost Sharing Deal"—which did not classify what was contributed to the CSA as platform or operating contributions—reflected the actual CSA. *See* Temp. Treas.

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[109] Drs. Unni and Newlon agreed that the market value may diverge from the intrinsic value. Neither they nor Dr. Hochberg, who also was questioned about Facebook's intrinsic value, defined intrinsic value; but we infer from their testimony that they would accept the definition drawn from Burton G. Malkiel, *A Random Walk Down Wall Street* 31–32 (2020), which was discussed at trial. In his well-known book, originally published in 1973, Dr. Malkiel explained that the theory of a firm foundation of intrinsic value "stresses that a stock's value ought to be based on the stream of earnings a firm will be able to distribute in the future." *Id.* at 32. Dr. Malkiel testified in *Veritas* as a financial markets expert. *Veritas*, 133 T.C. at 338–39.

Reg. § 1.482-7T(g)(4)(i)(B) (explaining that the "cost sharing alternative corresponds to the actual CSA in accordance with this section"). In general Dr. Newlon's inputs are unreliable because he failed to follow the income method. *See id.* subpara. (4). At trial Dr. Newlon offered his view that, in comparison to rules that "say one thing," he sees the practice of implementing valuation methodologies as "a little more loosey-goosey." His "loosey-goosey" practice of selecting (and clinging to) income-method inputs that are not anchored in the record doomed him to reach an unreliable result.

We instead have sifted through the record for inputs that we find more reliable (or less unreliable) than Dr. Newlon's. *See Buffalo Tool & Die Mfg. Co. v. Commissioner*, 74 T.C. 441, 452 (1980) (cautioning that we may find valuation evidence presented by one side "sufficiently more convincing than that of the other party, so that the final result will produce a significant financial defeat for one or the other, rather than a middle-of-the-road compromise which we suspect each of the parties expects the Court to reach").

Applying the 2009 cost sharing regulations to the record, we find that the most reliable income-method inputs to value the PCT Payment are (1) the LRP financial projections that exclude Other Revenue but make no adjustment for posttransaction acquisition costs; (2) the 17.7% discount rate adopted in EY's transfer pricing documentation for the international revenue in the actual CSA; and (3) the cost-plus-13.9% markup from Dr. Newlon's advertising and marketing agency CPM to value Facebook Ireland's ad sales and marketing activity under the licensing alternative. We have addressed only those inputs to Dr. Newlon's model that have been disputed by the parties. Insofar as petitioner did not challenge an input we assume that it is not controversial and therefore will adopt it.[110]

Having rejected Dr. Newlon's PCT Payment valuation, we now must decide whether to adopt the valuation method advocated by petitioner (Dr. Unni's unspecified method, with appropriate inputs, bolstered by Dr. Reichert's RPSM) or instead adopt the income method, using Dr. Newlon's model, with inputs corrected as above.

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[110] We take petitioner's silence regarding an input only to be a tacit agreement assuming that, as we conclude above, the income method is the correct method under the regulations, and that the regulations' adoption of the income method is valid, an issue we will turn to shortly.

4. *Dr. Unni's unspecified method and Dr. Reichert's RPSM*

Dr. Unni's unspecified method set an upper bound for the PCT Payment using the income method (that he claimed is not appropriate), and set a lower bound by applying *Amazon I* and *Veritas*, which in turn applied the 1995 cost sharing regulations. Petitioner describes Dr. Unni's unspecified method as an adjusted income method because he started with discounted cashflows and attributed profits to Facebook Ireland and Facebook US for their respective contributions.

Petitioner contends that parties dealing at arm's length would require economic profits, and the best method must reflect this requirement. It represents that the unspecified method in paragraph (g)(8) ultimately adopted by Dr. Unni produces this result by splitting economic profit consistent with Facebook Ireland's investments before and after it entered into the CSA. Petitioner contends that its $6.3 billion valuation for the PCT Payment is arm's length because it falls within the arm's-length range of amounts, $5.915 billion to $6.369 billion, that Dr. Unni ultimately determined.

Unlike Dr. Newlon, whose opinions seemed carved in stone, Dr. Unni changed his opinion from his opening report, to his rebuttal report, to his trial testimony. Because the evolution of his opinion is important to our evaluation of his ultimate conclusions, we summarize it below.

In his opening report Dr. Unni stated that he was asked to assume that Facebook Ireland made no platform contributions (that is, Facebook Ireland had not developed any "technology" before the transaction date). Under that assumption, and with the caveat that he was "given the methods specified in [Temp.] Treas. Reg. 1.482-7T (2009)," he opined that "the best method for determining arm's length payments for rights granted under the [FOP technology license] is the income method." He then valued the FOP technology, user community rights, and marketing intangibles both separately and in the aggregate using the income method. He observed that under the income method Facebook Ireland would receive no more than a market based return for its contributions to the CSA and Facebook US would receive "all future profits" from the cost shared intangibles. He also was asked to consider how his valuations would change if he instead applied the 1995 cost sharing regulations at issue in, and "as explained by," the Court in *Veritas* and *Amazon I*. To do so, he purported to measure the profits in the ROW territory attributable to the FOP technology and its future

development, taking into account its useful life using technology ramp-down curves derived from Alan MacCormack and David Parkes.

For his "separate" valuation of the FOP technology, user community rights, and marketing intangibles, Dr. Unni allocated revenue projections 70% to the FOP technology and 30% to the user community rights. He based this allocation on the industry-standard revenue share between third-party app developers and the platforms they use to access users. Facebook also followed this revenue split for in-app purchases using Facebook Credits. He did not analyze whether the 70/30 split is a CUT within the meaning of Treas. Reg. § 1.482-4(c), however. For the marketing intangibles he adopted a royalty rate of 1% (which he considered reasonable) and subtracted that from his FOP technology valuation. This separate valuation produced a value for the FOP technology of $3.213 billion and the user community rights of $5.406 billion with a total valuation for the FOP technology, user community rights, and marketing intangibles together (that is, the PCT Payment value) of $8.619 billion.

In his rebuttal report Dr. Unni opined that the income method was inconsistent with the arm's-length standard and that the best method was the approach taken in *Veritas* and *Amazon I*. He also made adjustments to his inputs to reflect fact witnesses' trial testimony[111] and his review of other experts' reports, primarily by removing Other Revenue, adjusting his chosen discount rate, and adjusting his ramp-down curve. To value the user community rights, Dr. Unni adopted a user community rights valuation offered by Dr. Luehrman, which in turn relied on a network effects model developed by Susan Athey. His revised valuation for the FOP technology was $3.009 billion and for the FOP technology, user community rights, and marketing intangibles together was $7.985 billion.

At trial, Dr. Unni finally settled on an unspecified method that took the midpoint of his upper-bound "aggregate" specified income

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[111] Expert rebuttal reports were filed after the conclusion of the first segment of the trial, which comprised the testimony by all but one fact witness. The intervening pandemic caused a much longer delay than anticipated between the testimony of the fact witnesses, the submission of expert rebuttal reports, and expert witness testimony, which presented certain challenges to the proper boundaries for rebuttal and surrebuttal. Mindful of these unusual circumstances, we have returned to the core responsibility of experts: to aid the trier of fact.

method, which produced a value of $6.996 billion,[112] and his lower-bound unspecified method applying the 1995 cost sharing regulations, which produced a value of $4.834 billion. *See* Temp. Treas. Reg. § 1.482-7T(g)(4), (8). He deemed the midpoint, of $5.915 billion, to represent the outcome of an arm's-length negotiation. To value the FOP technology, Dr. Unni ultimately settled on a modified decay curve[113] from Dr. Parkes.

Dr. Unni justified his shifting positions as appropriate to reflect the evidence at trial, but the record does not support his rationalization. His shifts went beyond adjustments necessary to reflect new evidence in the record (such as changes to the inputs) but rather could—and should—have been expressed plainly from the outset. The record does not support abandoning the income method, particularly given Dr. Unni's assumption that it would apply if Facebook Ireland made no nonroutine platform contributions (an accurate assumption, given what we found above). The most charitable explanation is that Dr. Unni's shifts were made in service of petitioner's legal challenge to the regulations themselves, but that legal challenge did not evolve with the record.

The regulations incorporate the best method rule and the arm's-length standard that petitioner claims override the very income method that Dr. Unni adopted in his opening report. We struggle especially with Dr. Unni's claim at trial that he had not offered an opinion in his opening report on what was the best method (taking into account his caveat that he was considering only the methods specified in the 2009 cost sharing regulations). His opening report expressly stated that he was determining the arm's-length value under the section 482 regulations, including, but not limited to, the 2009 cost sharing regulations. While his opening report included his opinion that the income method does not allow a return to Facebook Ireland beyond a market-based return for its benchmarkable contributions, this section of his report concluded that this was the arm's-length result stipulated by the regulations.

Dr. Unni's value to us as an expert is diminished considerably by the caveats he placed on his opinions. More broadly, we find the opinions

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[112] Petitioner states that "Dr. Unni used the specified income method to set an upper bound for the arm's length value of the PCT and other required royalties precisely because the specified income method improperly allocates all of the residual profit (i.e., all of the economic profit) to Facebook US."

[113] *See generally Amazon I*, 148 T.C. at 174 (analyzing the use of decay curves).

of Drs. Unni and Newlon to be of limited value because each transparently advocated a position. While Dr. Newlon's opinion was less convincing because he refused to adjust to the evidence, Dr. Unni's opinion suffered from his continual shifts. By contrast, Dr. Unni's justification of his inputs was better grounded in the record than Dr. Newlon's. He adjusted to new evidence whereas Dr. Newlon did not. We have incorporated our conclusions regarding Dr. Unni's inputs in our critique of Dr. Newlon's, with the exception of the ramp-down curves, which relate to Dr. Unni's application of the 1995 cost sharing regulations. Because we reject his unspecified method, we need not resolve which (if any) decay curve is appropriate. *See*, *e.g.*, Temp. Treas. Reg. § 1.482-7T(g)(2)(ii)(B) (providing an example of a platform contribution that the parties believe has a limited useful life but rejecting the unspecified method used to split the residual profits attributable to the contribution because it fails to account for the value of the technology throughout the period).

Citing Treas. Reg. § 1.482-1(c)(2)(iii), petitioner also contends that the result of Dr. Unni's unspecified method is confirmed by the RPSM applied by Dr. Reichert.[114] Petitioner avoids saying that the RPSM confirms the "arm's-length result" of Dr. Unni's unspecified method because that would imply that the RPSM (and Dr. Unni's unspecified method) produces an arm's-length result.[115]

We have found that only Facebook US made a nonroutine platform contribution. Therefore the income method is preferred over the RPSM. While this is our primary basis for rejecting Dr. Reichert's RPSM, *see* Temp. Treas. Reg. § 1.482-7T(g)(4)(i)(D), (7)(i), we also find Dr. Reichert's execution to be flawed. Dr. Reichert's use of decay curves to value the existing assets each participant purportedly contributed to the CSA is especially problematic.[116] His decay curves do not reflect the record before us, implying that Facebook's early technology investments

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[114] Respondent seeks to exclude Dr. Reichert's expert testimony on the basis of his failure to include certain publications as required by Rule 143(g)(1)(D). While we do not condone omission of these particular documents, we find that the failure did not unduly prejudice respondent. Our sense at trial was that Dr. Reichert did not intend to violate the spirit of Rule 143 by excluding documents that fell within its scope. And posttrial reflection has not changed our view. We therefore will deny respondent's Oral Motion to Exclude the Expert Testimony of Dr. Timothy Reichert under Rule 143(g).

[115] As we discuss below, petitioner maintains that the regulations do not produce an arm's-length result and therefore are invalid.

[116] We generally found Dr. Reichert to be an unconvincing witness at trial; and while we did not question his math, we remain unsure what he proved with it.

have less value than its later ones and are less valuable than Facebook Ireland's user community investments. As to inputs, our opinion regarding the proper revenue projections, discount rate, and best realistic alternative would apply equally to Dr. Reichert's model were we to find it appropriate, which we do not.

All three key valuation experts (Drs. Newlon, Unni, and Reichert) fell short on the key assignment for any expert: to help the trier of fact determine a fact in issue and base his or her opinion on sufficient facts and data and a reliable application of reliable principles and methods to the facts and data. *See, e.g.*, *Parker v. Commissioner*, 86 T.C. 547, 561 (1986) (citing Fed. R. Evid. 702). We have drawn conclusions relying on their testimony, but we have used a large shaker of salt to compensate for their advocacy.

Operating within the confines of the regulations, we conclude that the income method can be the best method for computing the PCT Payment; when properly applied with appropriate inputs it can produce an arm's-length result within the meaning of the regulations. We also conclude that Dr. Newlon's model, with corrected inputs, produces a reasonable result (within an arm's-length range).

We also conclude that Facebook US's platform contribution of the FOP technology is sufficiently interrelated with the transfer of the user community rights and marketing intangibles that applying the income method on an aggregate basis is "the most reliable measure of an arm's length charge . . . for the PCT(s) and other transactions." *See* Temp. Treas. Reg. § 1.482-7T(g)(2)(iv). We find Dr. Unni's unspecified method unreliable and find his implementation of a separate valuation in his opening report (subtracting the values for the user community rights and marketing intangibles from the total value of the CSA to compute the value for the FOP technology) to support an aggregate valuation of the contributions that we must value.

That does not end the dispute between the parties, however. Petitioner maintains that even with reliable inputs respondent's income method does not produce an arm's-length PCT Payment. We will finish our PCT analysis by addressing this argument. And because we conclude below that the regulations are valid, we conclude that Dr. Unni's unspecified method cannot be the best method because it is inconsistent with those regulations (not least because his method depends on application of the 1995 cost sharing regulations).

C. *Validity of the 2009 cost sharing regulations*

When considering the validity of a regulation, "[c]ourts must exercise their independent judgment in deciding whether an agency has acted within its statutory authority, as the APA requires." *Loper Bright Enters. v. Raimondo*, 144 S. Ct. 2244, 2273 (2024). Our "interpretive toolkit" for exercising our independent judgment includes the traditional rules of statutory construction. *See id.* at 2271.

A threshold question is whether we must reach the validity of the 2009 cost sharing regulations. The parties agree that we should leave for Rule 155 computations the correct PCT Payment value, and any resulting allocations to reflect the correct PCT Payment value. This is the approach we took in *Amazon I*, and we believe it is appropriate on the record before us as well. So in theory we could defer the validity question until we know whether there is a deficiency. But that has two problems. First, the income method with corrected inputs appears to produce a higher PCT Payment value than petitioner used to report its 2010 income and deductions. Second, petitioner's validity argument appears to preclude application of the 2009 cost sharing regulations to conclude petitioner's reporting position was reasonable.

At trial petitioner offered, and we accepted, into evidence an interactive spreadsheet of Dr. Newlon's model referred to as the "Newlon Interactive Model." Respondent expressed reservations about whether it correctly adjusted the linked spreadsheets that together constitute Dr. Newlon's model when we adjust various inputs on the summary "Control Panel and Results" tab. Nonetheless, the Newlon Interactive Model allows us to estimate the PCT Payment value using the corrected inputs we found (that is, international cashflows that exclude Other Revenue and remove posttransaction acquisition costs, discounted at a discount rate of 17.7%, with a sales and marketing return of cost-plus 13.9%). The Newlon Interactive Model with these corrected inputs indicates a PCT Payment value of $7.786 billion, on an aggregate basis (that is, without trying to divide among the FOP technology, user community rights, and marketing intangibles). This exceeds the $6.3 billion PCT Payment value petitioner used to compute its federal income tax for 2010. Therefore, we cannot deem petitioner's challenge to the 2009 cost sharing regulations superfluous.

In using the model we also are mindful of respondent's caution that adjustments to Dr. Newlon's inputs may cause the model to produce an unreliable result. We freely admit that we do not have a detailed

understanding of the model's inner workings, which is another reason to leave the PCT Payment value to Rule 155 computations. Dr. Newlon's explanation of his model does not suggest that the adjustments to his inputs we are requiring would cause his model to produce an unreliable result, however.

Neither can we accept petitioner's rejection of the methods in the regulations and at the same time use the methods to determine petitioner's reporting position was reasonable. Petitioner asks us to apply (and rely on the results of) methods in Temp. Treas. Reg. § 1.482-7T(g) but simultaneously maintains that any application of (and any result produced by) any method specified in paragraph (g) is "inconsistent with section 482."[117] Petitioner is careful not to call the results produced by the income method or the RPSM arm's length; it saves that term for the result produced by Dr. Unni's unspecified method (which used his application of the income method as the upper bound of an arm's-length range). And petitioner states that the result produced by Dr. Newlon's income method, once corrected, "proves" that petitioner's initial valuation was arm's length. It also maintains that we can rely on the result from the RPSM in paragraph (g)(7), or rather the result produced by Dr. Reichert's application of it. But petitioner never adopts the income method or Dr. Reichert's RPSM. In essence, petitioner is asking us to use a method it says is wrong to prove it is right.

We cannot conclude a method specified in the regulations is invalid because it conflicts with section 482 and at the same time rely upon it to conclude that petitioner has no deficiency. We must apply the regulations, which require selecting and applying a method listed in paragraph (g) to estimate the arm's-length PCT Payment, unless we conclude that they cannot apply because they are invalid.

1. *Origin of the arm's-length standard*

Petitioner's primary attack on the validity of the 2009 cost sharing regulations (and respondent's primary defense of them) relies on competing views of the import of the arm's-length standard under section 482. Petitioner does not claim that the statute is unambiguous; it simply asserts that the arm's-length standard is the "touchstone" of section 482. We therefore begin our analysis of petitioner's challenge

[117] Petitioner waived a procedural challenge to Temp. Treas. Reg. § 1.482-7T. It did not waive a substantive challenge that the regulations reach an outcome that is not permitted by statute either on their face or as applied to petitioner. *See* Order, September 23, 2022 (Docket Index No. 596).

with a brief history of the statute and the origin of the arm's-length standard.

The first sentence of what is now section 482 was enacted in 1928. Revenue Act of 1928, ch. 852, § 45, 45 Stat. 791, 806. Through it, Congress granted Treasury the authority to reallocate the reported income and deductions of related businesses "in order to prevent evasion of taxes or clearly to reflect the income of any such trades or businesses." *Id.* The statute was "designed to prevent 'artificial shifting, milking, or distorting of the true net incomes of commonly controlled enterprises.'" *Commissioner v. First Sec. Bank of Utah, N.A.*, 405 U.S. 394, 400 (1972) (quoting Boris I. Bittker & James S. Eustice, *Federal Income Taxation of Corporations and Shareholders* 15–21 (3d ed. 1971)). "In short, the primary aim of the statute was to prevent tax evasion by related business taxpayers." *Altera Corp. & Subs. v. Commissioner*, 926 F.3d 1061, 1068 (9th Cir. 2019), *rev'g* 145 T.C. 91 (2015).[118]

The second sentence of section 482 was enacted in 1986. Tax Reform Act of 1986, Pub. L. No. 99-514, § 1231(e)(1), 100 Stat. 2085, 2562–63. Specifically, Congress added the commensurate with income standard to section 482 "to ensure that income follows economic activity." *Altera Corp. & Subs. v. Commissioner*, 926 F.3d at 1077 (citing H.R. Rep. No. 99-841 (Vol. II), at II-637 (1986) (Conf. Rep.), *reprinted in* 1986 U.S.C.C.A.N. 4075, 4725). Through the 1986 amendment "Congress granted Treasury authority to develop methods that did not rely on analysis of . . . comparable transactions." *Id.*[119]

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[118] The Ninth Circuit's analysis of the arm's-length standard in *Altera* continues to frame our analysis, even after *Loper Bright*. First, the Ninth Circuit was using its interpretive toolkit to analyze the meaning of the statute. Second, to the extent that *Altera*'s relevant holdings rest on *Chevron*, the Supreme Court in *Loper Bright* was explicit that its rejection of *Chevron* does not "call into question prior cases that relied on the *Chevron* framework" as the Court's "change in interpretive methodology" is not enough, by itself, to justify overruling a statutory precedent. *Loper Bright Enters.*, 144 S. Ct. at 2273.

[119] In 2017 Congress amended sections 482 and 936(h)(3)(B). Tax Cuts and Jobs Act (TCJA), Pub. L. No. 115-97, § 14221(a), (b)(2), 131 Stat. 2054, 2218–19 (2017). Congress added a third sentence to section 482, mandating that Treasury require valuation of transfers of intangible property on an aggregate basis or on the basis of realistic alternatives if Treasury determines these approaches are the most reliable means of valuation. *See* TCJA § 14221(b)(2), 131 Stat. at 2219. Congress also amended the definition of "intangible property" cross-referenced by section 482, adding a new clause to section 936(h)(3)(B) that lists "goodwill, going concern value, or workforce in

Neither sentence of section 482 expressly adopts the arm's-length standard. Rather, the arm's-length standard originated in the regulations promulgated under the Revenue Act of 1934, ch. 277, 48 Stat. 680. Art. 45-1(b), Regulations 86 (1935). Those regulations provided, in part: "The standard to be applied in every case is that of an uncontrolled taxpayer dealing at arm's length with another uncontrolled taxpayer." *Id.* While "the Secretary adopted the arm's length standard, courts did not hold related parties to that standard by exclusively requiring the examination of comparable transactions." *Altera Corp. & Subs. v. Commissioner*, 926 F.3d at 1068. The arm's-length standard in the regulations looks to identical or comparable uncontrolled transactions when they can be identified. *See* Treas. Reg. § 1.482-1(b)(1). And when they cannot, Treasury may employ other (internal) allocation methods so long as they reflect the economic activity of the related parties. *See Altera Corp. & Subs. v. Commissioner*, 926 F.3d at 1077.

From 1934 to 1986, courts "explicitly permitted the use of flexible methodology in order to achieve an arm's length *result*." *Id.* at 1078. In many cases courts applied the comparability method of meeting the arm's-length standard. *Id.* at 1069–70 (citing Reuven S. Avi-Yonah, *The Rise and Fall of Arm's Length: A Study in the Evolution of U.S. International Taxation*, 15 Va. Tax Rev. 89, 108–29 (1995)). The 1986 addition of the commensurate with income standard "reflected Congress's view that strict adherence to the comparability method of meeting the arm's length standard prevented tax parity." *Id.* at 1070. The House report stated that the commensurate with income standard was intended to correct a "recurrent problem," namely, "the absence of comparable arm's length transactions between unrelated parties, and the inconsistent results of attempting to impose an arm's length concept in the absence of comparables." H.R. Rep. No. 99-426, at 423–24 (1985), *reprinted in* 1986-3 C.B. (Vol. 2) 1, 423–24; *see also Coca-Cola*, 155 T.C.

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place" as intangible property and expanding the catch-all to capture "any other item the value or potential value of which is not attributable to tangible property or the services of any individual." TCJA § 14221(a), 131 Stat. at 2218. Both amendments were applicable "to transfers in taxable years beginning after December 31, 2017." *Id.* § 14221(c)(1), 131 Stat. at 2219. The amendments were not "to create any inference" regarding prior law. *See id.* § 14221(c)(2).

In 2018 Congress moved the definition of intangible property to section 367(d)(4) and updated the cross-reference in section 482. *See* Consolidated Appropriations Act, 2018, Pub. L. No. 115-141, § 401(d)(1)(D)(viii)(III), 132 Stat. 348, 1207. The definition in section 367(d)(4) differs in style but not substance from the 2017 definition in section 936(h)(3)(B).

at 211–12 (discussing the impetus for the 1986 statutory amendment and 1994 changes to the regulations).

2. *The arm's-length standard and economic profits*

Relying on economic concepts rather than the statutory text, petitioner argues that the 2009 cost sharing regulations are inconsistent with section 482 because their methods for arriving at a PCT Payment value deny economic profits to the PCT Payor (Facebook Ireland). Petitioner uses the term "economic profits" to mean an expected positive NPV return—an expected return above the discount rate. In finance this often is called "alpha."

Although focusing on the income method as applied by Dr. Newlon, petitioner confirmed that its economic profits argument would render invalid all of the methods specified in Temp. Treas. Reg. § 1.482-7T(g) for valuing contributions to a CSA. Petitioner contends that because each specified method for valuing contributions to a CSA provided in Temp. Treas. Reg. § 1.482-7T(g) values cost contributions by discounting them to present value and then subtracting them from the PCT Payment (i.e., "caps" the expected return on projected cost contributions at the discount rate used to convert them to present value), all specified methods under the 2009 cost sharing regulations are invalid.[120]

Petitioner's real issue is with the "investor model" described in Temp. Treas. Reg. § 1.482-7T(g)(2)(ii), which applies to all methods. The regulation explains, in part, that "the relative reliability of an application of any method depends on the degree of consistency of the analysis with the applicable contractual terms and allocation of risk under the CSA and this section among the controlled participants." *Id.* Central to the parties' dispute is the investor model's assumption that the discount rate is an appropriate return:

> [T]he relative reliability of an application of a method also depends on the degree of consistency of the analysis with the assumption that, as of the date of the PCT, each controlled participant's aggregate net investment in the CSA Activity (attributable to platform contributions, operating contributions, . . . operating cost contributions,

[120] The only one that does not is the CUT method under paragraph (g)(3). But petitioner does not offer a CUT for the CSA.

> . . . and cost contributions) is reasonably anticipated to earn a rate of return equal to the appropriate discount rate for the controlled participant's CSA Activity over the entire period of such CSA Activity.

Id.

Petitioner's conclusion that economic profits are required by section 482 rests on its view that the "touchstone" of section 482 is the arm's-length standard and that the arm's-length standard was "embedded in section 482 by Congress." Where there are no uncontrolled comparables, petitioner maintains, the arm's-length standard requires a "method that is expected to most closely approximate the way in which unrelated parties price transactions." Petitioner submits that this approximation can be accomplished through sources such as peer-reviewed academic literature and broad industry standards.

Petitioner then contends that the record demonstrates that uncontrolled parties acting at arm's length would require a share of economic profits. The "real world" evidence to which petitioner points includes academic research by Francine Lafontaine, Dr. Korteweg, and Dr. Sorensen, Dr. Reichert's analysis of agreements petitioner claims are like a CSA, the investment bank's expected IRR, and common sense. Specifically, Dr. Lafontaine found that in uncontrolled licensing transactions parties seek to balance risk and opportunity and usually share in profits. Drs. Korteweg and Sorensen concluded that VCs would expect an alpha return on their investment. And Dr. Reichert concluded that a third party would not agree to fund a future investment without a future benefit. Petitioner therefore posits that a prospective participant acting at arm's length would expect economic profit (a positive NPV) before entering into a CSA.

Petitioner attempts to convert the arm's-length standard, as defined in Treas. Reg. § 1.482-1, into an independent rule. But nothing in the text of section 482 bars Treasury from prescribing what arm's length means when no comparable transactions can be identified. Section 482 does not contain the words "arm's length"; rather, its focus is on clear reflection of income and preventing tax evasion in controlled transactions. The only statutory touchstone relating to intangibles in section 482 is the "commensurate with the income" requirement. That addition seems to move the statute away from, not toward, an "arm's length" standard, at least as petitioner defines it; it requires compensation commensurate with the income earned in the transaction

at issue, not what unrelated parties operating at arm's length might have agreed.

The Ninth Circuit already has rejected petitioner's interpretation that, even when there are no uncontrolled comparables, Treasury must look externally in each case to real-world situations that approximate the controlled transaction. *See Altera Corp. & Subs. v. Commissioner*, 926 F.3d at 1077–78. In *Altera*, the Ninth Circuit expressly held that in the light of concerns over third-party comparables, a focus on internal allocations that follow economic activity is an appropriate method to reach an arm's-length result. *Id.*

And petitioner's interpretation disregards the function of the inputs into the income method. In particular, the discount rate is intended to replicate a return to an investor on the funding that it provides, approximating the cost of capital adjusted for systemic risk. Indeed, Dr. Unni admitted at trial that economic profit (the so-called alpha) would be accounted for by adding a percentage to the discount rate. This would provide a return beyond what a generic investor might expect for a generic investment with the same risk profile as Facebook's ROW territory.

Petitioner's objection that a generic investor would seek a return that is greater than its cost of capital proves too much. It necessarily assumes that this investment should be more attractive than another similar investment. The arm's-length standard does not require a preferred return (a positive NPV); it requires a return comparable to returns on other similar investments. Moreover, petitioner does not explain why in a controlled transaction, such as this, a positive NPV for Facebook Ireland would not result in a negative NPV for Facebook US. Petitioner claims only that this overlooks the opportunity costs to Facebook US (what else Facebook US might do with the capital freed up by Facebook Ireland's cost contributions to the CSA). But these other transactions (what else Facebook US might do) are external to the CSA and therefore are not part of the arm's-length returns from the CSA for each controlled participant.

To the extent petitioner's objection is that Facebook Ireland receives no return for its entrepreneurial contributions, that is addressed by proper comparables for the licensing alternative. That is, the income method divides Facebook Ireland's contributions to the CSA into two separate buckets. Facebook Ireland funds the development of the cost shared intangibles in the CSA with the PCT Payment (at the

outset) and by making cost contributions (during the CSA), for which it is compensated like a passive co-owner of the cost shared intangibles through a discount rate return for its funding activities. And Facebook Ireland exploits the cost shared intangibles through its operating contributions (at the outset) and operating cost contributions (during the CSA), for which it is compensated like an entrepreneur exploiting licensed intangibles through the licensing alternative return for its exploiting activities. It is incorrect therefore to conclude that the income method denies an economic profit for any entrepreneurial efforts of the PCT Payor. Petitioner's objections are addressed through selection of the proper inputs into the income method.

And finally, even if Treasury were required to consider sources such as academic literature and industry norms as evidence of uncontrolled transactions that might be comparable to a controlled transaction, the sources that petitioner cites are underwhelming. Academic literature showing that certain uncontrolled parties expect an alpha return for certain investments does not establish when they would require an alpha return. And petitioner acknowledges that investors may expect a zero NPV in an efficient market, conceding in effect that a positive NPV is not necessarily the product of an arm's-length negotiation. In short, petitioner's economic arguments do not prove that the 2009 cost sharing regulations reach a result inconsistent with the section 482 requirements of clear reflection and commensurate with income. *See Altera Corp. & Subs. v. Commissioner*, 926 F.3d at 1079.

D. *Other legal challenges to the 2009 cost sharing regulations*

1. *Major questions doctrine*

Citing *West Virginia v. EPA*, 597 U.S. 697, 724–32 (2022), petitioner disputes whether Congress intended to permit the Commissioner to reallocate economic profits from a taxpayer otherwise entitled to them. It points out that nothing in section 482 permits application of a method that deprives an otherwise deserving taxpayer of economic profits. We believe the wording of section 482 (authorizing Treasury to reallocate income, deductions, credits, and allowances if "necessary in order to prevent evasion of taxes or clearly to reflect the income of" controlled participants) is sufficient evidence of what Congress intended.

2. *Nondelegation doctrine*

In a footnote in its opening brief, petitioner notes an argument that section 482 is an invalid delegation of legislative power, to preserve the point for appeal. It acknowledges that we previously have held "that section 482 is not unconstitutional as an invalid delegation of legislative power." *Foster v. Commissioner*, 80 T.C. 34, 142 (1983), *aff'd in part*, *rev'd in part on other grounds*, 756 F.2d 1430 (9th Cir. 1985). Petitioner states that it has raised the argument anticipating the possibility of further legal developments to preserve it for appeal. We will spend no more energy rejecting it than petitioner spent raising it.

3. *Intangible property under section 936(h)(3)(B)*

Petitioner also spends a couple of pages in its opening brief on an argument that Facebook Ireland should not be required to compensate Facebook US for residual business assets. It is true that the definition of intangible property in the second sentence of section 482 in 2010 was limited to the intangible property listed under section 936(h)(3)(B). But the first sentence of section 482 has no such limits; the statute does not constrain the contributions to a CSA that might be compensable through a PCT Payment.

4. *"Ex post" adjustments*

Petitioner alternatively challenges the 2009 cost sharing regulations because they require taxpayers to value platform contributions in advance but permit the Commissioner to value them after the transaction with the benefit of hindsight. But this describes every adjustment by the Commissioner. In deciding this case we have traveled back in time to consider the opportunities and risks Facebook reasonably anticipated as of the transaction date. And to the extent petitioner is concerned that respondent could make an adjustment to the PCT Payment valuation as of the transaction date under paragraph (i)(3) and take a second bite at that valuation apple later under paragraph (i)(6), we address this issue next, in our discussion of the relationship between paragraph (i)(3) and (i)(6).

5. *Commensurate with income "range"*

We now turn to petitioner's legal argument that respondent is precluded from adjusting Facebook Ireland's PCT Payment because it fell within a commensurate with income "range" that serves as a "band

of comfort."[121] Specifically, petitioner argues that its 2010 Actually Experienced Return Ratio (AERR) falls within the Periodic Return Ratio Range (PRRR) and was within or below the PRRR in every year leading up to and including 2016. *See* Temp. Treas. Reg. § 1.482-7T(i)(6)(ii) ("[T]he PRRR will consist of return ratios that are not less than .667 nor more than 1.5."). Because a periodic adjustment under paragraph (i)(6) would not be permitted, petitioner reasons, respondent should be barred from making any PCT allocation under paragraph (i)(3).

Respondent counters that Facebook Ireland's AERR is irrelevant because he did not make a periodic adjustment under paragraph (i)(6) for 2010; he made a PCT allocation under paragraph (i)(3). Respondent also disputes petitioner's calculation of its AERR, should we conclude that the PRRR has any role to play.

The first issue we must address is whether Facebook Ireland's 2010 AERR is relevant to our determination of the appropriate PCT Payment under paragraph (i)(3).

Paragraph (i)(6)(i) provides, in part:

> Subject to the exceptions in paragraph (i)(6)(vi) of this section, the Commissioner may make periodic adjustments for an open taxable year . . . and for all subsequent taxable years for the duration of the CSA Activity with respect to all PCT Payments, if the Commissioner determines that, for a particular PCT (the Trigger PCT), a particular controlled participant that owes or owed a PCT Payment relating to that PCT . . . has realized an [AERR] that is outside the [PRRR].

Petitioner applies paragraph (i)(6)(vi)(A)(*3*) to Facebook's actual revenues and expenses to compute Facebook Ireland's AERR for each year from 2010 through 2016, using respondent's assumptions regarding operating cost contributions, royalty characterization, Dr. Newlon's 14.44% discount rate, and PCT allocations. The resulting AERRs for Facebook Ireland fall below the lower bound of the PRRR (0.667) for each year. Petitioner therefore argues that respondent's PCT

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[121] Petitioner first raised this argument in a Motion for Summary Judgment. After a hearing, we deferred ruling on the issue until after trial. Petitioner and respondent repeated their legal positions in posttrial briefs incorporating their prior summary judgment briefs (as we urged). We have considered the arguments made in all of the briefs in reaching our conclusion.

allocations necessarily are unreasonable and not commensurate with income. Petitioner also applies the regulation's AERR using its proposed discount rate of 19.36% (along with its reported operating cost contributions and royalties) to calculate cumulative AERRs for 2010 through 2016 for Facebook Ireland. Petitioner claims that the resulting AERRs do not exceed the PRRR for any of these years, confirming its view that the PCT Payment it relied upon to compute the royalties it reported for 2010 is reasonable.

The regulations do not explain the interaction between the adjustments in paragraph (i)(6) and (i)(3)—that is, they do not express a priority or coordination rule. Paragraph (g)(2)(ix)(A) only provides that the arm's-length range does not override rules for periodic adjustment in paragraph (i)(6): "The rules provided in § 1.482-1(e) and this section for determining an arm's length range shall not override the rules provided in paragraph (i)(6) of this section for periodic adjustments by the Commissioner." Petitioner claims that this supports its argument that paragraph (i)(6) overrides paragraph (i)(3), but the words do not support that application. The regulation addresses periodic adjustments in paragraph (i)(6); it does not authorize paragraph (i)(6) to override a PCT allocation in paragraph (i)(3). That is, providing that certain rules for determining a PCT allocation under paragraph (i)(3) do not override the results under paragraph (i)(6) does not mean that rules in paragraph (i)(6) override the results under paragraph (i)(3).

The lack of a broader coordination rule does give us pause. Specifically, neither the parties—nor we—identified any rule barring the Commissioner from making a periodic adjustment after making a PCT adjustment. However, the Commissioner is to consider whether a periodic adjustment in paragraph (i)(6) produces an outcome that "more reliably reflects an arm's length result under all the relevant facts and circumstances." *Id.* para. (i)(6)(i). We infer that if the Commissioner has made a PCT allocation pursuant to the regulations, or, as here, we have made a determination as to what is an arm's-length PCT Payment, these would be relevant facts and circumstances within the meaning of paragraph (i)(6)(i), so the PCT Payment by definition would be considered arm's length for purposes of paragraph (i)(6)(i). That issue, of course, is not ripe as respondent has not made any adjustment under paragraph (i)(6). *See LTV Corp. v. Commissioner*, 64 T.C. 589, 595 (1975). We note it only insofar as it informs our consideration of petitioner's argument.

Because we conclude that the adjustments under paragraph (i)(3) and (i)(6) are independent, we also conclude that the rules in paragraph (i)(6) do not function as a safe harbor for purposes of determining whether PCT allocations are reasonable. We therefore need not reach the parties' further dispute over how Facebook Ireland's AERR should be computed.

VI. *CST Payments*

Finally, we must determine Facebook US's and Facebook Ireland's RAB shares under the CSA.

The 2009 cost sharing regulations require CSA participants to make annual CST Payments so that in each year they share their IDCs in proportion to their RAB shares. Temp. Treas. Reg. § 1.482-7T(a)(1), (b)(1)(i).

A CSA participant's RAB share "is equal to its reasonably anticipated benefits divided by the sum of the reasonably anticipated benefits . . . of all the [CSA] participants." *Id.* para. (e)(1)(i). Reasonably anticipated benefits are "the benefits that reasonably may be anticipated to be derived from exploiting cost shared intangibles." *Id.* para. (j)(1)(i). For this definition, "benefits mean the sum of additional revenue generated, plus cost savings, minus any cost increases from exploiting cost shared intangibles." *Id.*

RAB shares must be determined using the most reliable estimate of reasonably anticipated benefits. *Id.* para. (e)(1)(i). Reliability depends "largely on the completeness and accuracy of the data, the soundness of the assumptions, and the relative effects of particular deficiencies in data or assumptions on different estimates." *Id.* Critical to the parties' dispute, the regulations further provide that

> reasonably anticipated benefits must be estimated over the entire period, past and future, of exploitation of the cost shared intangibles, and must reflect appropriate updates to take into account the most reliable data regarding past and projected future results available at such time. A controlled participant's RAB share must be determined by using the most reliable estimate.

Id.

The regulations provide that two "factors will be particularly relevant in determining the reliability of an estimate of RAB shares": (1) "[t]he basis used for measuring benefits" and (2) "[t]he projections used to estimate benefits." *See id.*

Under the CSA, Facebook US and Facebook Ireland agreed to measure RAB shares according to the NPV of projected gross profits in the current year and subsequent two years in their respective territories. *See id.* para. (k)(1)(ii)(E) (requiring CSA to provide RAB share method). And they agreed to update RAB shares as necessary. *See id.* para. (e)(1)(i).

Respondent does not dispute the basis on which Facebook US and Facebook Ireland measured reasonably anticipated benefits (gross profit). But he does contend that Facebook's use of rolling three-year projections to estimate RAB shares violates the regulation's "entire period" requirement, *see id.*, because the CSA provides for an initial five-year term with successive automatic one-year renewals.

Respondent contends instead that RAB shares should be calculated on the basis of projections into perpetuity, increasing Facebook Ireland's RAB share for 2010, thereby increasing its 2010 CST Payment.[122] He adopts Dr. Newlon's analysis, which computed RAB shares for each year using the NPV of projected gross profits for that year and all subsequent years. Dr. Newlon also computed RAB shares using the method provided in the CSA, labeling them "Alternative RAB Shares." He observed that the projected RAB shares under the two methods gradually converge over the 2010 through 2020 forecast period he used. He also noted that reducing Facebook Ireland's RAB share would increase the PCT Payment owed by Facebook Ireland because reduced cost sharing payments would increase international cashflows.

Neither party offers an economic basis for its position. Rather their argument centers on how to interpret the regulatory requirement that the RAB share must "be estimated over the entire period, past and future, of exploitation of the cost shared intangibles" and "must be determined by using the most reliable estimate." Temp. Treas. Reg. § 1.482-7T(e)(1)(i). We therefore start our analysis by considering what the regulations say about these requirements.

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[122] This increase has the effect of reducing the deductions that Facebook US could claim for research and development costs, thereby increasing its 2010 tax liability.

> Projections used for the RAB share calculation
>
> > generally include a determination of the time period between the inception of the research and development activities under the CSA and the receipt of benefits, a projection of the time over which benefits will be received, and a projection of the benefits anticipated for each year in which it is anticipated that the cost shared intangible will generate benefits.

Id. subpara. (2)(iii)(A). If benefit shares are expected to vary significantly, "it normally will be necessary to use the present value of the projected benefits to reliably determine RAB shares." *Id.* On the other hand, current annual benefits may be used when significant variation is not anticipated. *Id.* The regulations add that this is most likely "when the CSA is a long-term arrangement, the arrangement covers a wide variety of intangibles, the composition of the cost shared intangibles is unlikely to change, the cost shared intangibles are unlikely to generate unusual profits, and each controlled participant's share of the market is stable." *Id.*

Petitioner points out that the regulations do not require projections over the entire CSA, but over the period of exploitation. It points out that a forecast covering the current year plus two would be more reliable than a forecast into perpetuity and follows Facebook's contemporaneous planning cycle at the time, which used three-year projections. And Facebook's CSA methodology contemplated that the parties would update the RAB share calculation annually to ensure that the parties bear costs consistent with observed results and contemporaneous projections.

The problem with petitioner's argument is that the regulations focus on the reliability of the RAB share estimate, not the gross profit forecasts. We agree that using projections into the indefinite future may not more reliably project total profits over the "entire period . . . of exploitation" as required by the regulations. *See id.* para. (e)(1)(i). Neither petitioner nor its experts offered evidence that the projected RAB shares (that is, the division of the projected profits between Facebook US and Facebook Ireland) would be less reliable if computed over a longer period. The regulations flag the potential variation in benefit shares, and we cannot assume on the record before us that there would not be significant variation in benefit shares.

We heard many hours of testimony about the anticipated growth in the international market, both the potential opportunities and the potential risks. While we can conclude that "the CSA is a long-term arrangement, [and] the arrangement covers a wide variety of intangibles," the record does not support a conclusion that "the composition of the cost shared intangibles is unlikely to change, the cost shared intangibles are unlikely to generate unusual profits, and each controlled participant's share of the market is stable." *Id.* para. (e)(2)(iii)(A).

We therefore hold that respondent did not abuse his discretion under section 482 by computing RAB shares for each year using the NPV of projected gross profits for that year and all subsequent years to determine the required 2010 CST Payment. Respondent's expert Dr. Newlon (and therefore respondent) determined the amount of the deficiency attributable to this issue using the forecast he developed for computing the PCT Payment. And we note the interaction between any adjustments to the PCT Payment and the CST Payment for 2010. The parties therefore are directed to recompute the CST Payment in Rule 155 computations using the corrected inputs we found above with respect to the PCT Payment.

Conclusion

Applying the statute and regulations, we conclude that using the income method to determine the requisite PCT Payment value and resulting payments for 2010 produces an arm's-length result if the correct inputs are used. And we adopt the inputs as stated above. The regulations themselves are not invalid merely because they impose a limit on the expected return on IDCs at a discount rate reflecting market-correlated risks. We also conclude that respondent's method for computing petitioner's CST Payment, using corrected inputs, is consistent with the regulations.

To implement the foregoing,

An appropriate order will be issued, and decision will be entered under Rule 155.

APPENDIX A: EXPERT WITNESSES[123]

Petitioner's Expert Witnesses

1. *Susan Athey*

Dr. Athey is the Economics of Technology Professor at Stanford University Graduate School of Business. She is also the Founding Director of the Golub Capital Social Impact Lab at Stanford and the Associate Director of the Stanford Institute for Human Centered Artificial Intelligence. She received a B.A. in economics, computer science, and mathematics from Duke University and a Ph.D. in economics from Stanford. She is a member of the National Academy of Sciences and a research associate at the National Bureau of Economic Research. She previously served as Consulting Chief Economist for Microsoft and now serves on numerous corporate boards. The Court recognized Dr. Athey as an expert in econometrics, the economics of the internet, platform markets, and online advertising.

2. *Yael Hochberg*

Dr. Hochberg is the Ralph S. O'Connor Professor of Entrepreneurship and Professor of Finance at the Jones Graduate School of Business at Rice University. She is also the head of the Entrepreneurship Initiative and Liu Idea Lab for Innovation and Entrepreneurship at Rice University. She received a B.Sc. in industrial engineering and management from the Technion-Israel Institute of Technology, an M.A. in economics from Stanford University, and a Ph.D. in business administration (finance) from Stanford University Graduate School of Business. She is a research associate at the National Bureau of Economic Research. The Court recognized Dr. Hochberg as an expert in innovation and entrepreneurial finance. Dr. Hochberg testified in rebuttal only.

3. *Michael Kearns*

Dr. Kearns is a professor of computer and information science at the University of Pennsylvania. He received a B.A. in mathematics and computer science from the University of California at Berkely and an M.S. and a Ph.D. in computer science from Harvard University. His research focuses on machine learning and algorithms using methods

[123] These expert witness backgrounds are as of the date the witnesses offered their expert opinions to the Court.

and models from theoretical computer science and related disciplines. He has applied his knowledge of artificial intelligence and machine learning as a consultant for the Department of Justice and large businesses and financial firms. He was elected to the National Academy of Sciences for his contributions to machine learning. The Court recognized Dr. Kearns as an expert in AI/ML technologies.

4. *Kevin Lane Keller*

Dr. Keller is the E.B. Osborn Professor of Marketing at the Tuck School of Business at Dartmouth. He received an A.B. in mathematics and economics from Cornell University, an M.B.A. from Carnegie Mellon University, and a Ph.D. in marketing from the Fuqua School of Business at Duke University. He previously taught at the University of California Berkeley, Stanford University, the University of North Carolina, and Duke University. He has extensive teaching and research experience in the areas of advertising, branding, and marketing communications. He also has coauthored two textbooks. The Court recognized Dr. Keller as an expert in branding and marketing. Dr. Keller testified in rebuttal only.

5. *Arthur G. Korteweg*

Dr. Korteweg holds the Jorge Paulo and Susanna Lemann Chair in Entrepreneurship and is an Associate Professor of Finance and Business Economics at the University of Southern California Marshall School of Business. His teaching and research have focused on the risk and return characteristics of private equity and, in particular, VC-backed firms. He received an M.A. in economics from Tilburg University and an M.B.A. and a Ph.D. in finance from the University of Chicago Graduate School of Business. He has also published numerous articles on the subject. He is an associate editor of the *Review of Financial Studies* and the *Journal of Financial Economics*. The Court recognized Dr. Korteweg as an expert in beta, with a focus on private VC-backed company betas. Dr. Korteweg testified in rebuttal only.

6. *Francine Lafontaine*

Dr. Lafontaine is the Interim Dean and the William Davidson Professor of Business Economics and Public Policy at the University of Michigan Stephen M. Ross School of Business. She also is a professor of economics at the University of Michigan's Department of Economics and a research fellow at the Centre for Economic Policy Research. She received a B.A.A. in business administration and an M.Sc. in applied

economics from the Université de Montréal and a Ph.D. in economics from the University of British Columbia. Her research, mostly empirical, focuses on contracting between firms, including vertical relationships, franchising, and sales force compensation. She previously served as the Director of the Federal Trade Commission's Bureau of Economics. The Court recognized Dr. Lafontaine as an expert in industrial organization and organizational economics.

7. *Anja Lambrecht*

Dr. Lambrecht is a professor of marketing at the London Business School. She received degrees in business from Goethe University in Germany and the Université Paris-Dauphine in France, and a Ph.D. in marketing from Goethe University. Her teaching and research focus on marketing, specifically on digital environments and online advertising. Before her academic career she worked as a consultant for McKinsey & Company on projects in software, media, and telecommunications industries with a focus on marketing and sales. She is a member of the United Kingdom's research working group on digital market policies and is a Marketing Science Institute Scholar. The Court recognized Dr. Lambrecht as an expert in digital advertising and marketing.

8. *Timothy Luehrman*

Dr. Luehrman is an independent consultant advising corporate clients and legal counsel on matters involving corporate finance, business valuation, capital budgeting, capital planning, solvency, and related topics. He received a B.A. in economics and English literature from Amherst College, an M.B.A. from Harvard Business School, and a Ph.D. in business economics from the Graduate School of Arts and Sciences at Harvard University. He previously was a professor of finance at Harvard Business School, IMD International in Switzerland, the MIT Sloan School of Management, and The American Graduate School of International Management. He has extensive teaching, research, and consulting experience in the areas of corporate finance and financial economics. The Court recognized Dr. Luehrman as an expert in corporate finance and business valuation.

9. *Alan MacCormack*

Dr. MacCormack is the MBA Class of 1949 Adjunct Professor of Business Administration at Harvard Business School. He received a B.Sc. in electrical and electronic engineering from the University of Bath in England, an M.Sc. in management from the MIT Sloan School of

Management, and a D.B.A. from Harvard Business School. His teaching focuses on innovation and product development in technological industries. His work has focused on software development processes and software architecture and design, and he has written numerous papers on the topics. He has applied his research as a consultant for the U.S. Government and large private companies. The Court recognized Dr. MacCormack as an expert in software architecture and development.

10. *David C. Parkes*

Dr. Parkes is the George F. Colony Professor of Computer Science and Co-Director of the Data Science Initiative at Harvard University. He was the Area Dean for Computer Science from 2013 to 2017. He received a master's degree in engineering and computing science from the University of Oxford and a Ph.D. in computer and information science from the University of Pennsylvania. He teaches courses on AI/ML, optimization, multiagent systems, and algorithmic economics. He also provides technical consulting services to various companies, typically startups. The Court recognized Dr. Parkes as an expert in computer science.

11. *Timothy Reichert*

Dr. Reichert is the founder and president of Economic Partners, LLC, an economic consulting firm. He received a B.A. in political philosophy from Franciscan University, an M.A. in international political economics from The Catholic University of America, and a Ph.D. in economics from George Mason University. His practice focuses on transfer pricing and valuation. The Court recognized Dr. Reichert as an expert in economics and transfer pricing.

12. *Scott Steinberg*

Mr. Steinberg is the chief executive officer of TechSavvy Global/FutureProof Strategies, a strategic innovation consulting firm, and the general manager of Phoenix Online, a video game developer and publisher. He received a B.S. in management from the Georgia Institute of Technology. He has over 20 years of industry experience advising companies on digital distribution strategies, including digital distributors, developers, and publishers. The Court recognized Mr. Steinberg as an expert in the growth and monetization of online distribution platforms.

13. *Sanjay Unni*

Dr. Unni is a managing director at the Berkeley Research Group, an expert services firm specializing in economics and financial analysis. He received a B.A. in economics from the University of Delhi in India and an M.A. and a Ph.D. in economics from Southern Methodist University. He has taught courses on corporate finance, investment analysis, market structures, and finance at several institutions in the United States and the United Kingdom. As a transfer pricing economist he has drafted more than 30 transfer pricing reports, primarily related to technology firms. He also has published and taught in the field of financial economics. The Court recognized Dr. Unni as an expert in economics, financial economics, transfer pricing, and valuation.

14. *Robert Wentland*

Mr. Wentland is a senior managing director at Ankura Consulting Group, a provider of financial and operational consulting services. He received a B.B.A. in accounting from the University of Wisconsin-Madison. He is a CPA and is also certified in financial forensics. He previously worked for Arthur Andersen LLP, Huron Consulting Group, and Navigant Consulting, Inc. The Court recognized Mr. Wentland as an expert in accounting.

Respondent's Expert Witnesses

1. *Geoff Cohen*

Dr. Cohen is a technologist for the U.S. Privacy and Civil Liberties Oversight Board. He received an A.B. from Princeton University and a Ph.D. in computer science from Duke University. He previously worked at Elysium Digital LLC where he provided litigation consulting services. He is a member of the Association of Computing Machinery. The Court recognized Dr. Cohen as an expert in computer science and technology development.

2. *Michelle Hanlon*

Dr. Hanlon is the Howard W. Johnson Professor and a professor of accounting at the MIT Sloan School of Management. She received a B.B.A. from Eastern Illinois University, an M.Acc. from the University of Missouri-St. Louis, and a Ph.D. in business with a major in accounting from the University of Washington. Her teaching and research focus on financial accounting and taxation, and she received MIT Sloan's Jamieson Prize for Excellence in Teaching. She has published numerous papers and coauthored three textbooks on financial accounting and taxation, and she serves as an editor of *The Journal of Accounting and Economics*. The Court recognized Dr. Hanlon as an expert in accounting.

3. *Lorin M. Hitt*

Dr. Hitt is the Zhang Jindong Professor of Operations, Information, and Decisions at the University of Pennsylvania Wharton School of Business. He received a Sc.B. and an M.S. in electrical engineering from Brown University and a Ph.D. in management from the MIT Sloan School of Management. His research and teaching focus on the relationship between information technology and productivity and the factors that affect the value of information technology investments. He previously worked as a strategy consultant for Oliver, Wyman and Company and as an engineer for the U.S. Army. He has published on the economics of information technology. The Court recognized Dr. Hitt as an expert in the economics of technology and technology development.

4. *Kinshuk Jerath*

Dr. Jerath is an associate professor of business in the marketing division at Columbia Business School. He received a bachelor of

technology in computer science and engineering from the Indian Institute of Technology Bombay and a Ph.D. in operations and information management from the Wharton School at the University of Pennsylvania. His research focuses on technology-enabled marketing, of which advertising is a component. He serves as an editor for numerous journals focusing on marketing and has published widely in the area. He is a Marketing Science Institute Scholar. The Court recognized Dr. Jerath as an expert in technology-enabled marketing and advertising.

5. *James Malackowski*

Mr. Malackowski is the chief executive officer of Ocean Tomo, LLC, a financial services and advisory firm focused on intellectual property. He received a B.B.A. from the University of Notre Dame. He has worked in the field of intellectual property consulting since 1985. The Court recognized Mr. Malackowski as an expert in intangible and intellectual property transactions and industry practice.

6. *Ian Maude*

Mr. Maude is an independent consultant focusing on internet advertising and media. He received a B.Sc. in mathematics from the University of Sheffield and an M.B.A. from Warwick Business School, both in the United Kingdom. He has held various positions in the advertising industry since the late 1980s, including head of advertising sales and director of advertising and e-commerce for AOL UK. He has worked as a research analyst and consultant covering internet advertising markets and previously served on the advisory board of the Internet Advertising Bureau UK. The Court recognized Mr. Maude as an expert in internet advertising and media.

7. *T. Scott Newlon*

Dr. Newlon is a managing director at Horst Frisch Inc., an economic consulting firm specializing in economics and transfer pricing. He received a B.S. in economics from the University of Delaware and an M.A. and Ph.D. in economics from Princeton University. He previously served as a principal at KPMG. He also served as a senior staff economist at the U.S. Department of the Treasury. Dr. Newlon was a principal author of both the 1994 transfer pricing regulations and the 1995 cost sharing regulations, and he participated in the drafting of the 1995 OECD Transfer Pricing Guidelines. He also has published in the field of international tax and transfer pricing. The Court recognized Dr. Newlon as an expert in economics, transfer pricing, and valuation.

8. *Geoffrey G. Parker*

Dr. Parker is a professor of engineering at Dartmouth College. He is also the director of Dartmouth's Master of Engineering Management Program, a visiting scholar at the MIT Sloan School of Management, and a research fellow at MIT's Initiative for the Digital Economy. He received a B.S. in electrical engineering and computer science from Princeton University, an M.S.E. in technology and policy from MIT, and a Ph.D. in management science from MIT. His teaching and research focus, in part, on the economics of platform businesses. He also teaches a course on data analytics, including regression and simulation analyses. The Court recognized Dr. Parker as an expert in business economics, including platform economics and statistical analysis.

9. *Carl Saba*

Mr. Saba is a partner in the financial and forensic consulting group at Hemming Morse, LLP. He received a B.S. in business administration and finance from the University of California Berkeley and an M.B.A. with an emphasis in finance from the Marshall School of Business at the University of Southern California. The Court recognized Mr. Saba as an expert in business valuation.

10. *Morten Sorensen*

Dr. Sorensen is an associate professor of finance at the Tuck School of Business at Dartmouth College. He received a B.Sc. in mathematical economics from Aarhus University, an M.Sc. in economics from Aarhus University, and a Ph.D. in economics from Stanford University. His teaching and research focus on entrepreneurial finance, VC, and private equity. We recognized Dr. Sorensen as an expert in financial economics, specializing in private equity, VC, and entrepreneurial finance. Dr. Sorensen testified in rebuttal only.

11. *Ilya A. Strebulaev*

Dr. Strebulaev is the David S. Lobel Professor of Private Equity and Professor of Finance at the Stanford University Graduate School of Business and a research associate at the National Bureau of Economic Research. He received a B.A. in economics from Lomonosov Moscow State University, an M.A. in economics from the New Economic School in Moscow, an M.Phil. in finance from the London Business School, and a Ph.D. in Finance from the London Business School. His research and teaching focus on financial decision-making, corporate finance,

valuation, VC, private equity, and entrepreneurship. He has published extensively in these fields and has served as both an associate editor and referee for various publications. The Court recognized Dr. Strebulaev as an expert in financial economics, valuation, and VC.

APPENDIX B: DEFINED TERMS

Defined term	*Meaning*
2009 Agreements	intercompany agreements executed in December 2009, with a January 2009 effective date
Ads Manager	Facebook's "self-service" ad platform
Ads Revenue	revenue projected from Facebook's digital advertising included in LRP Base Case and Downside Excluding Other Revenue financial scenarios
AERR	actually experienced return ratio
AI/ML	artificial intelligence/machine learning
Amended Answer	First Amendment to Answer
APIs	application programing interfaces
apps	software applications
ARPU	average revenue per user
ATO	Australian Tax Office
Board	Facebook's board of directors
CAGR	compound annual growth rate
CAPM	capital asset pricing model
CPM	comparable profits method
Credits	Facebook Credits, Facebook's virtual currency for in-app purchases on the Facebook Platform
Credits Revenue	revenue projected from Credits included in LRP Base Case and Downside Excluding Other Revenue financial scenarios
CSA	cost sharing arrangement
CSA agreements	all of the agreements executed as part of the transaction
CST	cost sharing transaction
CST Payments	payments pursuant to a CST
CUSP	comparable uncontrolled services price
CUT	comparable uncontrolled transaction
DAUs	daily active users
DCF	discounted cashflow
DHSA	Data Hosting Services Agreement

domestic territory	Facebook US's territory under the CSA (United States and Canada)
DSO	direct sales organization
ERA	Expense Reimbursement Agreement
Facebook Ireland	FIH and FIL together
Facebook Platform	the specific Facebook product that allows third-party developers to integrate software apps into the site and interact with users
Facebook US or petitioner	Facebook, Inc., and its domestic subsidiaries
FIH	Facebook Ireland Holdings Unlimited
ad sales team	the DSO, ISO, and OSO, together
FB Foreign Sales Affiliates	the nine international sales offices that Facebook had established before the transaction date
FIL	Facebook Ireland Limited (elected disregarded entity status on September 1, 2010)
FMV	fair market value
FOP technology	Facebook Online Platform, as defined in § 1.7 in the CSA
FOP technology license	the Online Platform Intangible Property Buy-In License Agreement
G&A	general and administrative
GASA	General and Administrative Services Agreement
GDSA	Growth and Development Services Agreement
IDA	intangible development activity
IDCs	intangible development costs
IO	insertion order
IPLA	Intangible Property License Agreement
IPO	initial public offering
IRR	internal rate of return
ISO	inside sales organization
marketing intangibles	Facebook US's existing marketing intangibles, including trademarks
LRP	Long Range Plan
MAUs	monthly active users
NAAs	Network Affiliate Agreements
NPV	net present value

Octazen	Octazen Solutions
Octazen technology	the Octazen contact importer technology
OSO	online sales operations organization
Other Revenue	revenue included in LRP Base Case but not Downside Excluding Other Revenue financial scenario
Pages	Facebook Pages, the product through which organizations create a public profile
PCT	platform contribution transaction
PCT Payment	the up-front payment in a PCT for platform contributions
Profile	Facebook Profile, the product through which individuals create their user profiles
PRRR	periodic return ratio range
PYMK	People You May Know
RAB share	share of reasonably anticipated benefits from exploiting cost shared intangibles
Resellers	third-party ad resellers with whom Facebook had NAAs
ROW territory	Facebook Ireland's territory under the CSA (everywhere but the United States and Canada)
RPSM	residual profit split method
SCRA	Sales Cost Reimbursement Agreement
SMSAs	Sales and Marketing Service Agreements
social graph	conceptual representation of the real-world connections between people and their friends and interests
transaction	the September 15, 2010, CSA and associated agreements (namely, the FOP technology and UBMI licenses)
transaction date	September 15, 2010
UBMI license	User Base Transfer and Marketing Intangibles License Agreement
user community rights	rights associated with Facebook US's existing user, advertiser, and developer communities
VC	venture capital
WACC	weighted average cost of capital