WAKE FOREST JOURNAL OF BUSINESS AND INTELLECTUAL PROPERTY LAW

VOLUME 20 SUMMER 2020 NUMBER 3

NEW KID ON THE BLOCKCHAIN: USING BLOCKCHAIN TECHNOLOGY TO REFORM STEP-UP BASIS OF INHERITED ASSETS

Andrew Bosserman[†]

[†] © 2020 Andrew Bosserman is a third-year student at Wake Forest University School of Law and the Editor-in-Chief of the *Wake Forest Journal of Business and Intellectual Property Law*. Prior to law school, Andrew worked as an IRS agent and as a CPA. He also owned and operated his own Christmas tree farm. Andrew has a B.S. in Business with majors in accountancy and finance from Miami University. After graduation, Andrew plans to work as a tax attorney.

I. INTRODUCTION

Current tax law provides an outdated and inequitable preference to heirs who inherit appreciated assets, as compared to individuals who receive gifted assets during the donor's lifetime. This tax preference, known as "step-up" basis, is expected to cost the United States government $105 billion in foregone tax revenue over the next ten years, not including all lost revenue from prior years.[1] Individuals who receive gifted assets take the donor's basis in the asset, also known as "carryover" basis.[2] Contrastingly, heirs receive a "step-up" in the basis of an inherited asset to its fair market value, effectively exempting the asset's appreciation during the decedent's lifetime from income tax.[3]

Congress tested a carryover basis regime for inherited assets twice, in 1976[4] and in 2010.[5] Due to changes in estate tax law and in technology, arguments against a carryover basis regime are no longer sound. Less than one estate out of every thousand is subject to the estate tax, resulting in minimal concerns about double taxation.[6] Moreover, current technology permits easy tracking of the decedent's basis. One such technology that could facilitate a carryover basis regime is blockchain. Blockchain's "trustless" technology utilizing decentralized ledgers[7] could track the basis of assets, making carryover basis for heirs easy to ascertain. Using blockchain to facilitate carryover basis would result in increased economic efficiency, increased ease of asset transfers upon death, and increased demand for blockchain solutions.[8]

First, this comment explores current step-up basis law, Congress' prior attempts to establish a carryover basis regime, current estate tax law, and the basics of blockchain technology. Next, it will analyze why arguments against using carryover basis for inherited assets are no longer sound and how blockchain could facilitate a carryover basis regime. Finally, this comment will explore the business impact of using blockchain to reform step-up basis and the resulting economic benefits.

---

[1] CONG. BUDGET OFFICE, CBO54667, OPTIONS FOR REDUCING THE DEFICIT: 2019 TO 2028 219 (2018).

[2] I.R.C. § 1015 (2018).

[3] *Id.* § 1014(a)(1).

[4] Tax Reform Act of 1976, Pub. L. No. 94-455, § 2005, 90 Stat. 1520, 1874.

[5] Economic Growth and Tax Relief Reconciliation Act of 2001, Pub. L. No. 107-16, § 901, 115 Stat 38, 41.

[6] *Policy Basics: The Federal Estate Tax*, CTR. ON BUDGET & POL'Y PRIORITIES (Nov. 7, 2018), https:// www.cbpp.org/sites/default/files/atoms/files/policybasics-estatetax.pdf.

[7] Trevor I. Kiviat, *Beyond Bitcoin: Issues in Regulating Blockchain Transactions*, 65 DUKE L.J. 569, 574, 578 (2015).

[8] *See infra* Part III.C, for a discussion of the business implications of using blockchain to reform step-up basis.

II. BACKGROUND

A. An Overview of Step-Up Basis

Generally, an "accession to wealth" is a taxable event according to the Internal Revenue Code.[9] One common accession to wealth occurs when a taxpayer sells or exchanges assets or property.[10] When an asset is sold or exchanged, the difference between the amount realized and the adjusted basis of the asset is either a realized gain or loss.[11] The amount realized is the sum of any money received plus the fair market value of any property received,[12] while the adjusted basis of an asset is usually its cost.[13] A gain is usually taxable, unless a specific exclusion exists, and a loss may be deductible, if loss limitation rules do not apply.[14]

Taxpayers frequently purchase assets or property, and the basis of a purchased asset is generally its cost.[15] However, individuals may also acquire property through receipt of a gift. If a taxpayer receives a gifted asset while the donor is still living (an *inter vivos* gift), the donee takes the property with a "carryover" basis, or the basis in the hands of the donor.[16] Carryover basis ensures that the asset's appreciation during the donor's holding period will not escape taxation through realization of the gain when the donee sells or disposes of the property.[17]

Inherited assets are a significant exception to the standard basis regime described above. When a taxpayer dies, the heir records their adjusted basis as the fair market value of the property on the date of the decedent's death, otherwise known as "step-up" basis because the heir's basis is "stepped-up" to fair market value.[18] If the fair market value of the asset is less than the decedent's basis, it will be "stepped-down." However, this process of using fair market value rather than the decedent's carryover basis is generally referred to as step-up basis.[19]

---

[9] *See* I.R.C. § 61(a) (2018); *Comm'r v. Glenshaw Glass Co.*, 348 U.S. 426, 431 (1955).

[10] *See* § 61(a).

[11] *Id.* § 1001(a).

[12] *Id.* § 1001(b).

[13] *Id.* § 1012(a).

[14] *See id.* §§ 61(a)(3), 1001(c), 165.

[15] *Id.* § 1012.

[16] *Id.* § 1015(a).

[17] The donor's unrealized appreciation plus any additional appreciation is taxed when the donee sells or disposes of the asset. The amount realized will be calculated according to I.R.C. § 1001(b) and the adjusted basis will be carryover basis per I.R.C. § 1015.

[18] *Id.* § 1014(a)(1).

[19] *Id.*

The heir also has the option to elect an alternative valuation date, by which the heir may record their basis as the fair market value of the property six months after the decedent's death.[20] However, in no instance is a carryover basis applied to an inherited asset.[21] Step-up basis results in the asset's unrealized appreciation, while in the hands of the decedent, escaping taxation because the heir's taxable gain or loss on the asset is figured with respect to the new step-up basis set at fair market value.[22] Further, inheriting an asset is not a taxable event under current tax law.[23]

Section 1014 of the Internal Revenue Code has been debated over the years but has become widely accepted as the norm.[24] Proponents of Section 1014 and step-up basis typically have two main arguments supporting step-up basis: (1) step-up basis prevents double-taxation resulting from estate taxes, and (2) step-up basis prevents difficulty in determining the decedent's basis in the asset.[25] These arguments were strongly debated when the Tax Reform Act of 1976 modified the laws surrounding step-up basis and Section 1014.[26]

B. 1976 Disallowance of Step-Up Basis and Subsequent Repeal in 1981

The first time Congress implemented a carryover basis regime was in Section 2005 of the Tax Reform Act of 1976.[27] Section 2005 provided that "the basis of carryover property acquired from a decedent dying after December 31, 1976, in the hands of the person so acquiring shall be the adjusted basis of the property immediately before the death of the decedent."[28] The new carryover basis regime received harsh criticism from tax professionals and the general public due to hasty drafting by Congress and lack of technical debate before approval.[29]

---

[20] *Id.* §§ 1014(a)(2), 2032.

[21] *See id.* § 1014.

[22] *See id.* §§ 1014, 1001.

[23] *Id.* § 102.

[24] Robert Gordon et al., *Revenue and Incentive Effects of Basis Step-Up at Death: Lessons from the 2010 "Voluntary" Estate Tax Regime*, 106 AM. ECON. REV. 662, 662 (2016).

[25] *See, e.g.*, Lawrence Zelenak, *Taxing Gains at Death*, 46 VAND. L. REV. 361, 364, 368 (1993).

[26] Howard J. Hoffman, *The Role of the Bar in the Tax Legislative Process*, 37 TAX L. REV. 411, 439–40, 443 (1982).

[27] Tax Reform Act of 1976, Pub. L. No. 94-455, § 2005, 90 Stat. 1520, 1874.

[28] *Id.*

[29] Hoffman, *supra* note 26, at 441.

Within a year after the law was passed, lawmakers began advocating for carryover basis' repeal.[30]

While Congress was considering repeal of carryover basis and a return to step-up basis, many professional groups, including the American Bar Association and the American Institute of Certified Public Accountants, lobbied heavily for its repeal.[31] Both the House of Representatives and the Senate held hearings about carryover basis repeal, in which many arguments for repeal were heard.[32] One main argument was that the recordkeeping required for carryover basis was too onerous and difficult to make a carryover basis regime feasible.[33] Another main argument against carryover basis was that it was inequitable because it treated small and large estates differently.[34]

However, supporters proffered a number of arguments in favor of carryover basis. One main argument supporting carryover basis was that step-up basis creates economic inefficiencies due to the "lock-in" effect.[35] Step-up basis incentivizes taxpayers to retain appreciated assets, rather than sell them, because the unrealized gain will be extinguished at death due to step-up basis.[36] Step-up basis results in economic inefficiency because taxpayers will retain underperforming or less profitable assets instead of selling and replacing the underperforming assets with more profitable assets.[37] Further, step-up basis and the lock-in effect primarily benefit wealthier taxpayers because they are more likely to pass on property at death, while less wealthy taxpayers often must sell their assets and spend down their resources during retirement.[38]

Ultimately, Congress decided a carryover basis regime was not feasible at the time and eventually repealed carryover basis in 1981.[39] Congress would wait almost twenty years to revisit the carryover basis issue.[40]

---

[30] *See id.* at 444.
[31] *Id.* at 445.
[32] *Id.* at 444–45.
[33] *Id.* at 448–49.
[34] *Id.* at 469–71.
[35] *Id.* at 475.
[36] *Id.* at 440.
[37] *Id.*
[38] Scott Eastman, *The Trade-offs of Repealing Step-Up in Basis*, TAX FOUND. (Mar. 13, 2019), https://files. tax foundation.org/20190312171146/The-Trade-offs-of-Repealing-Step-Up-in-Basis-FF-641.pdf.
[39] Crude Oil Windfall Profit Tax Act of 1980, Pub. L. No. 96-223, § 401(a), 94 Stat. 229, 299.
[40] Richard Schmalbeck et al., *Advocating a Carryover Tax Basis Regime*, 93 NOTRE DAME L. REV. 109, 122–23 (2017).

C. 2010 Temporary Carryover Basis Regime

Congress wished to completely repeal the estate tax shortly after President George W. Bush was elected, but instead settled for a reduced and temporary version of its desired law.[41] The new law provided for an increasing estate tax exemption every year from 2002 to 2009, culminating in an entire estate tax repeal in 2010.[42] However, the estate tax repeal was short-lived and only applied for 2010 because the new tax law had a sunset provision for years after 2010.[43]

As part of the estate tax repeal, Congress also decided to institute a carryover basis regime for 2010, similar to the regime it enacted in 1976.[44] The 2010 carryover basis regime provided that the basis of a person acquiring property from a decedent would be the lesser of: (1) the adjusted basis of the decedent or (2) the fair market value of the property at the date of the decedent's death.[45] Legislation passed at the end of 2010 actually permitted executors of decedents who died during 2010 to choose whether they wanted to use step-up basis and be subject to the estate tax, or carryover basis and no estate tax.[46]

Unlike the 1976 carryover basis regime, the 2010 temporary carryover basis law received minimal criticism.[47] One of the main objections to carryover basis argued during the Congressional hearings to repeal the 1976 law was that the decedent's basis was extremely difficult or impossible to determine.[48] The minimal criticism that the 2010 temporary carryover basis regime received seemed to imply taxpayers in 2010 did not have difficulty ascertaining the decedent's basis, likely due to technological advances.[49] However, the lack of criticism could also be due to the fact that very few taxpayers were affected by the 2010 carryover basis regime.[50]

---

[41] *Id.*

[42] Economic Growth and Tax Relief Reconciliation Act of 2001, Pub. L. No. 107-16, §§ 501, 521, 115 Stat. 69, 71–72.

[43] *Id.* § 901.

[44] *See id.* §§ 541–42.

[45] *Id.*

[46] Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010, Pub. L. No. 111-312, § 301, 124 Stat. 3296, 3300–01.

[47] Schmalbeck et al., *supra* note 40, at 127.

[48] Hoffman, *supra* note 26, at 440–41.

[49] Schmalbeck et al., *supra* note 40, at 127, 131.

[50] *Id.* at 127–28.

D. Step-Up Basis and Estate Tax Law Since 2010

Since 2010, step-up basis has been the only permissible method for determining the basis of inherited property.[51] While there have been no changes to step-up basis in recent years, the estate tax exemption has been steadily increasing since estate tax reform began in 2001.[52] The per-person estate tax exemption was $675,000 in 2001,[53] and it increased to $3.5 million by 2009.[54] By 2019, the per-person estate tax exemption increased to $11.4 million.[55] For example, a married couple's estate would not be subject to any estate tax unless their estate is worth more than $22.8 million at death (using 2019 exemption amounts).[56] Due to the increased exemption, less than one estate out of every thousand was subject to estate tax in 2017.[57]

In conjunction with the increase in the estate tax exemption, the top marginal tax rate for estates has fallen considerably, from 55% in 2001 to 40% in 2019.[58] The result of the falling rates and other exemptions is that taxable estates pay an average effective tax rate of 16.5%.[59] The large gap between the marginal and effective estate tax rate is primarily due to the ability of wealthy estates to use complex tax planning strategies to pass on portions of their estate tax-free.[60] Extremely large estates are not the only estates able to take advantage of tax planning strategies; even smaller taxable estates pay close to no estate tax.[61] This evolution of the estate tax has coincided with the evolution of technology, particularly the recent development and implementation of blockchain technology.

E. An Overview of Blockchain Technology

Put simply, blockchain is a "trustless" technology.[62] Blockchain is a decentralized authentication and verification technology that allows individuals to transact without a trusted third party or central institution.[63] Blockchain technology accomplishes trustless

---

[51] I.R.C. §§ 1014(a)(1), (b)(1) (2018).
[52] *Policy Basics: The Federal Estate Tax*, *supra* note 6.
[53] *Id.*
[54] *Id.*
[55] Rev. Proc. 2018-57, 2018-49 I.R.B. 827, 835.
[56] *Id.*
[57] *Policy Basics: The Federal Estate Tax*, *supra* note 6.
[58] *Id.*; *see also* I.R.C. § 2001(c).
[59] *Policy Basics: The Federal Estate Tax*, *supra* note 6.
[60] *Id.*
[61] *See id.*
[62] Kiviat, *supra* note 7, at 574.
[63] *Id.*

transactions through a distributed, decentralized public ledger that maintains records of all transactions on a particular network.[64] The "blockchain" is this transaction ledger.[65] Further, the ledger is subject to cryptographic verification, called "proof-of-work" validation, whenever a transaction is initiated.[66] Proof-of-work validation ensures that transactions cannot be changed once they have been entered on the blockchain unless there is a second, offsetting transaction.[67]

A simplified description of how a transaction works over blockchain is as follows: (1) Party A notifies the entire network of the transaction; (2) Party B responds to the entire network declaring its acceptance of the transaction; and (3) the network members verify the transaction's authenticity using "proof-of-work" validation.[68]

The one popular use of blockchain technology is creating digital currencies, or "cryptocurrencies."[69] The most popular cryptocurrency is Bitcoin, a cryptocurrency created in 2010 by an unknown person using the pseudonym Satoshi Nakamoto.[70] In reality, Bitcoins do not actually "exist" because Bitcoins are simply records of Bitcoin transactions on a blockchain.[71] Bitcoin or other cryptocurrency is essentially a bearer asset; to own cryptocurrency means to possess the encryption key allowing the right to access and transfer.[72]

A Bitcoin transaction includes three types of information: (1) an input with a record of the previous address that sent the Bitcoins; (2) an amount of Bitcoins to be transferred; and (3) an output address of the intended recipient of the Bitcoins.[73] Despite Bitcoin's popularity comprising approximately 65% of the cryptocurrency market, currently more than 2,700 different cryptocurrencies are available with a combined value of over $230 billion.[74]

Beyond cryptocurrencies, many other uses for blockchain exist. One such use is "smart contracts," which use blockchain technology to "facilitate, verify, execute and enforce the terms of a commercial

---

[64] *Id.* at 578.

[65] *Id.*

[66] *Id.* at 578–80.

[67] *Id.* at 578–79.

[68] *Id.* at 603.

[69] *See* USMAN W. CHOHAN, UNIV. OF N.S.W. SCH. OF BUS. & ECON., CRYPTOCURRENCIES: A BRIEF THEMATIC REVIEW 1–2 (2017).

[70] *Frequently Asked Questions*, BITCOIN, http://bitcoin.org/en/faq#general (last visited Oct. 10, 2019).

[71] TIM SWANSON, GREAT CHAIN OF NUMBERS: A GUIDE TO SMART CONTRACTS, SMART PROPERTY, AND TRUSTLESS ASSET MANAGEMENT 17 (2014).

[72] *Id.* at 17–19.

[73] *Id*.

[74] *Cryptocurrency List*, COINLORE, http://coinlore.com/all_coins (last visited Oct. 9, 2019).

agreement."[75] The conditions and subsequent consequences in a contract are programmed into blockchain; once conditions occur or do not occur, the blockchain automatically verifies the condition and executes the consequence.[76] The Netherlands is currently experimenting with using smart contracts for certain lease agreements.[77]

Another emerging practical use of blockchain technology is recording real estate documents, such as deeds, mortgages, easements, and restrictive covenants.[78] In 2016, the Cook County Recorder's office in Illinois began experimenting with blockchain technology to track and record real property titles.[79] This eight-month experiment was successful and resulted in Cook County contracting with Conduent, a technology company, to incorporate blockchain technology into an entirely new recording system for the county.[80]

One benefit of using blockchain for real property titles is that fraudulent transactions cannot be added to the blockchain because blockchain transactions require identity verification and consent of all parties involved.[81] However, the initial import of information into blockchain is extremely important, as blockchain is still susceptible to the mantra "garbage in, garbage out."[82] Users can still add bad or incorrect data to the blockchain, even if proper protocols are followed.[83]

Another unique use of blockchain technology is to certify and verify artwork.[84] Verisart, a start-up, is attempting to digitize and verify every existing art object.[85] Once Verisart's database is finished, art buyers will be able to confirm the provenance and authenticity of the artwork they are purchasing.[86] In November 2018, Christie's New York, an auction house, partnered with Artory, a blockchain art registry, to record

[75] SWANSON, *supra* note 71, at 11.

[76] *Id.* at 16.

[77] S.H. Spencer Compton & Diane Schottenstein, *Blockchain Technology and Its Applicability to the Practice of Real Estate Law*, 2017 LEXISNEXIS EMERGING ISSUES 7512, 5, 8 (2017).

[78] *Id.* at 3.

[79] *Id*.

[80] *The Real Estate Deal, Decluttered: Blockchain and Deed Recording*, DEEDS.COM (Jan. 28, 2019), https://www.deeds.com/articles/the-real-estate-deal-decluttered-blockchain-and-deed-recording/.

[81] Compton & Schottenstein, *supra* note 77, at 3–4.

[82] *Id.*

[83] *Id.*

[84] *See* VERISART, http://www.verisart.com (last visited Oct. 20, 2019).

[85] James Tarmey, *A Tech Startup is Trying to Catalogue Every Piece of Art on the Market*, BLOOMBERG (July 21, 2015), https://www.bloomberg.com/news/articles/2015-07-21/a-tech-startup-is-trying-to-catalogue-every-piece-of-art-on-the-market.

[86] *Id.*

auction sales of artwork on blockchain.[87] The art world is increasingly using Blockchain to track information and certify transfers, though many art experts believe widespread use of blockchain is still many years away.[88]

Other valuables, such as gemstones and jewelry, are also tracked using blockchain technology. In May 2018, DeBeers, the world's largest diamond producer, announced that it began tracking diamonds from mine to retailer using blockchain.[89] DeBeers' blockchain solution, Tracr, assures diamond buyers of the gem's provenance, authenticity, and history.[90]

III. ANALYSIS

A. Arguments Supporting Step-Up Basis Are No Longer Sound

The debate surrounding the Tax Reform Act of 1976 and subsequent repeal of carryover basis focused on two main arguments supporting step-up basis that are no longer sound in 2020. The first argument was that using carryover basis results in double taxation if the estate is also subject to the estate tax. However, changes in estate tax law over the past few decades have rendered double taxation an unnecessary worry for all but the largest estates.[91] As previously discussed, less than one out of every thousand estates are currently subject to the estate tax because the estate tax exemption was at $11.40 million per person for 2019.[92] Therefore, double taxation concerns only exist for those estates subject to the estate tax, which is a very small percentage of the existing population.

If Congress wishes to eliminate double taxation, it could change the law so that inherited assets not part of taxable estates would use carryover basis and inherited assets part of taxable estates would use step-up basis, similar to the 2010 temporary basis law. However, it may be difficult for an heir to know if the decedent's estate was taxed, so it may be easier to simply use carryover basis for all inherited assets in the interest of administrative convenience.

Further, keeping step-up in basis will result in many appreciated

---

[87] Zohar Elhanani, *How Blockchain Changed the Art World in 2018*, FORBES (Dec. 17, 2018), https://www.forbes.com/sites/zoharelhanani/2018/12/17/how-blockchain-changed-the-art-world-in-2018/#17b4aa263074.

[88] *Id.*

[89] Zandi Shabalala, *De Beers Tracks Diamonds Through Supply Chain Using Blockchain*, REUTERS (May 10, 2018, 6:44 AM), https://www.reuters.com/article/us-anglo-debeers-blockchain/de-beers-tracks-diamonds-through-supply-chain-using-blockchain-idUSKBN1IB1CY.

[90] *See* TRACR, https://www.tracr.com (last visited Oct. 20, 2019).

[91] Hoffman, *supra* note 26, at 439.

[92] Rev. Proc. 2018-57, 2018-49 I.R.B. 827, 835.

assets going untaxed. Unrealized capital gains are a significant portion of large estates, ranging from 32% for estates worth $5-10 million, up to 55% for estates worth more than $100 million.[93] The government is estimated to forgo approximately $105 billion in tax revenue over the next 10 years due to step-up basis rules.[94]

The second argument lobbied against the 1976 carryover basis law was that determining the decedent's basis in the inherited asset is extremely difficult.[95] However, current technology permits much easier basis tracking. Blockchain is one technology that could make basis tracking much simpler and more trustworthy. The following section will discuss examples of how blockchain could track the basis of certain assets.

Another argument against carryover basis arises in determining the outcome if the taxpayer cannot determine or prove what the decedent's basis was at death. One option is simply to give the taxpayer a basis of $0 in the inherited asset; however, this would likely result in harsh tax consequences because a taxpayer could have a much larger taxable gain than expected. One way to mitigate the issue of being unable to ascertain carryover basis is to institute a similar policy that the 1976 Tax Reform Act titled the "Fresh Start Adjustment."[96] The Fresh Start Adjustment permitted heirs to adjust the basis of an asset with unrealized appreciation to its fair market value on December 31, 1976.[97] After the basis was stepped-up on December 31, 1976, the taxpayer would be responsible for tracking the basis and the individual who eventually inherited the asset would take the asset at carryover basis.[98]

Congress could introduce a similar system to the Fresh Start Adjustment if it reforms step-up basis in the future. All existing assets could have their basis stepped-up on a certain date. From that date forward, heirs would use carryover basis for inherited assets. This solution would be an easy way for heirs to determine carryover basis in the absence of other records; they could simply use the fair market value on the date of the step-up adjustment.

B. How Blockchain Could Facilitate a Carryover Basis Regime

Congress should implement a carryover basis law for inherited assets because the arguments supporting step-up basis are no longer sound. Blockchain's authentication and verification technology could

[93] *Policy Basics: The Federal Estate Tax*, *supra* note 6.
[94] CONG. BUDGET OFFICE, *supra* note 1.
[95] Hoffman, *supra* note 26, at 448–49.
[96] Tax Reform Act of 1976, Pub. L. No. 94-455, § 1023(h), 90 Stat. 1520, 1874.
[97] *Id.*
[98] *Id.*

facilitate a carryover basis regime by making it easier for heirs to determine carryover basis of inherited assets. However, the viability of blockchain as a solution will depend upon incentivizing parties to record their transactions on a blockchain and the availability of blockchain solutions.

1. Real Estate

Real estate is a prime example of how blockchain could facilitate a carryover basis regime, primarily due to recording statutes. Although buyers and sellers may not have many incentives to record transactions on blockchain, recording statutes require recordation of real property transactions.[99] If counties begin recording real property transactions on the blockchain as some counties already have,[100] buyers and sellers will be forced to have their transactions recorded on blockchain. Further, if Congress decides to adopt a carryover basis regime, it would incentivize individuals to record their deeds on blockchain or would encourage county recorders to implement blockchain recording. Blockchain recording would make it easier for heirs to ascertain their carryover basis in inherited property.

A deed recorded on blockchain would be a digital version of the deed indicating the parties, parcel, price, and any other important information.[101] The deed is often simply a traditional paper copy of the deed with a QR code linking it to a blockchain.[102] An heir of real property could simply look to the price recorded on blockchain in the prior transfer to ascertain the carryover basis in the property. While this method may not reveal the decedent's exact basis, since the purchase price would likely not reflect any improvements or changes to the property, it is a starting point and better than receiving no basis in the property. Further, the heir can trust the price previously recorded on blockchain because blockchain users authenticated and verified the price when the transaction was originally recorded.

One major concern surrounding the implementation of real estate recording on blockchain is the initial input of data into blockchain.[103] The county recorder's office will likely perform or manage the initial input of data. The initial importation of blockchain data must be error-free because errors can be difficult to reverse once

[99] 66 AM. JUR. 2d *Records and Recording Laws* § 40 (2019).

[100] Compton & Schottenstein, *supra* note 77, at 3.

[101] *See Here's What a Blockchain Property Deed Looks Like*, GOV'T TECH. (Apr. 16, 2018), https://www.govtech.com/biz/Heres-What-a-Blockchain-Property-Deed-Looks-Like.html.

[102] *Id.*

[103] *See* Compton & Schottenstein, *supra* note 77, at 3–4.

added to blockchain.[104] However, clerical errors can be solved by allowing certain blockchain users, such as the recorder, the ability to rewrite transactions using a "secret key."[105] The ability to rewrite transactions on blockchain is extremely powerful, and there must be sufficient oversight to prevent fraud or corruption.[106] Once the county recorder performs an accurate, initial import of every parcel in a county to blockchain, users should trust the current and future information because fraud or corruption of the property records would be impossible without a "secret key."

2. Financial Securities

Financial securities, such as stocks and bonds, could also be recorded on blockchain to maintain record of ownership and the purchase or sale amount. Similar to a bitcoin transaction, a blockchain transaction for a stock or bond could consist of (1) an input of the previous owner of the stock, (2) the number and stock certificates being traded, (3) the dollar amount of the transaction, and (4) an output showing the new owner of the stock.[107]

In August 2017, Delaware began allowing corporations to maintain shareholder lists using blockchain technology, replacing the old and inefficient system that relied on the Depository Trust Company.[108] Using blockchain technology to maintain shareholder records allows corporations to easily determine who all of the current shareholders are, as well as any historical shareholders.[109]

A blockchain, similar to the ones used for Delaware corporate stock ledgers, could be used to easily determine carryover basis when an individual inherits common stock or other publicly traded securities. Unlike real estate transactions, financial security transfers are not

[104] *Id.*

[105] Gideon Greenspan, *The Blockchain Immutability Myth*, MULTICHAIN (May 4, 2017), https://www.multichain.com/blog/2017/05/blockchain-immutability-myth/.

[106] *See generally id.* (explaining the power that comes with rewriting transactions on blockchain and how the power can be abused).

[107] *See* Reade Ryan & Mayme Donohue, *Securities on Blockchain*, 73 BUS. LAW. 85, 98–100 (2017).

[108] David Dinkins, *Delaware Approves Tracking of Stock Ownership on Blockchain, Major Effects*, COINTELEGRAPH (Sept. 20, 2017), https://cointelegraph.com/news/delaware-approves-tracking-of-stock-ownership-on-blockchain-major-effects.

[109] *Id.*

required to be recorded by statute.[110] However, there are many incentives for shareholders to record their ownership on a blockchain.

First, shareholders should record their stock ownership on blockchain to make it easy for their heirs to determine their carryover basis. Stock or other securities held for long periods of time or by different custodians frequently show unknown basis on brokerage statements because the IRS only began requiring custodians to report cost basis in 2011.[111]

Second, blockchain recordation ensures that corporations are aware of correct ownership for dividends and other shareholder events. Corporations often have a difficult time determining all of the current shareholders.[112] For example, Dole Food Company was taken private in 2013 at a price of $2.74 per share.[113] Shareholders submitted claims for payment for over 49 million shares; however, Dole only issued 36.7 million shares.[114] Blockchain recording could have prevented the issue of determining the correct shareholders, and it could have also streamlined payment for current shareholders.

3. Artwork & Gemstones

Artwork and gemstones are also excellent candidates for blockchain recording because they are unique.[115] Similar to a bitcoin, stock, or bond transaction, a blockchain transaction for artwork or gemstones could consist of (1) an input of the artwork or gemstone's previous owner, (2) the date the transaction occurs, (3) the dollar amount of the transaction, and (4) an output showing the artwork or gemstone's new owner.[116]

Major companies in the art and gemstone industries are beginning to use blockchain.[117] Last year, the auction house, Christie's, became the first major auctioneer to begin using blockchain to record art

---

[110] *See* Pete Chandler, *Tax Time Topics: Cost Basis, What You Need to Know*, FINRA (Mar. 22, 2018), https://www.finra.org/investors/insights/tax-time-topics-cost-basis-what-you-need-know.

[111] *Id.*

[112] Dinkins, *supra* note 108.

[113] *Id.*

[114] *Id.*

[115] Aaron Ricadela, *Blockchain Records Are Forever In Opaque Diamond Market*, FORBES (July 12, 2019, 5:00 AM), https://www.forbes.com/sites/oracle/2019/07/12/blockchain-records-are-forever-in-opaque-diamond-market/#15dee20e270b.

[116] *See id.*

[117] Henri Neuendorf, *Christie's Will Become the First Major Auction House to Use Blockchain in a Sale*, ARTNET NEWS (Oct. 12, 2018), https://news.artnet.com/market/christies-artory-blockchain-pilot-1370788.

sales.[118] On Christie's blockchain, Artory, potential buyers can view the entire transaction history of the art set for auction.[119] Sellers can register their art on the Artory blockchain, which gives them a greater chance of selling their art because buyers want to be confident in the provenance of the art they are buying.[120] In the gemstone industry, DeBeers' blockchain solution, Tracr, assures diamond buyers of the gem's provenance, authenticity, and history.[121]

Christie's and DeBeers' blockchain solutions are a good start to tracking unique valuables and could also facilitate a carryover basis regime. As described above, a possible entry on an artwork or gemstone blockchain could include the previous owner, the new owner, the date of the transaction, and the amount. The blockchain could also include the intended heir of the valuable. This data stored in blockchain would contain the necessary information an heir would need to ascertain their carryover basis in the valuable.

C. Business Impact of Using Blockchain to Reform Step-Up Basis

1. Economic Efficiency

As mentioned previously, step-up basis can lead to a lock-in effect where property owners choose to retain underperforming assets rather than selling and paying taxes on the appreciation.[122] Step-up basis also discourages taxpayers from reinvesting capital gains earnings into more profitable areas of the economy.[123]

Carryover basis would minimize the lock-in effect because there would not be a significant tax difference between the decedent selling the asset before their death or the heir selling the asset. Upon death of the decedent, the heir would take the asset at carryover basis, similar to if the decedent had made an *inter vivos* gift of the asset during their lifetime. A tax difference could arise if the heir is in a lower tax bracket than the decedent; however, the tax difference would likely not be too significant. Although the heir may be in a lower tax bracket and pay less taxes than the decedent on the asset, the government would prefer some tax revenue over the current step-up basis regime where the asset completely escapes taxation.[124]

---

[118] *Id.*
[119] *Id.*
[120] *Id.*
[121] TRACR, *supra* note 90.
[122] Hoffman, *supra* note 26, at 440.
[123] Eastman, *supra* note 38.
[124] Taylor LaJoie & Huaqun Li, *Analysis of the Economic, Revenue, and Distributional Effects of Repealing Step-up in Basis*, TAX FOUND. (Feb. 24, 2020),

If Congress adopts a carryover basis regime, economic efficiency would increase because taxpayers would no longer have an incentive to retain underperforming assets, as there would be no tax benefit to owning appreciated assets at death. Under a carryover basis regime, taxpayers should be more willing to sell underperforming assets during their lifetime and reinvest the capital from the sale in more productive assets or areas of the economy. This willingness to sell underperforming assets will benefit businesses in general because there should be more investment capital available to them that would otherwise be tied up in underperforming assets.

Further, intermediaries such as banks and brokers will benefit from a likely increase in transactions because taxpayers would no longer feel "locked-in" to their investments. Blockchain will further increase economic efficiency because of the technology's ability to track basis and facilitate transfers to heirs efficiently upon death of the decedent.

2. Efficient Transfer of Assets Upon Death

Implementing a carryover basis regime using blockchain would also create efficiencies in transferring the decedent's assets upon death. Blockchain would create less work for fiduciaries, fewer valuation issues, and fewer IRS audits.

Blockchain would create less work for fiduciaries and executors of estates because the executor could transfer the asset's ownership to the heir or intended beneficiary recorded on the blockchain. Blockchain could also shorten probate by quickly validating the decedent's assets, the intended beneficiaries, and the decedent's basis in the assets.

A carryover basis regime would create fewer valuation issues for inherited assets because the heir would use the decedent's carryover basis. Blockchain would contain the decedent's basis in the asset, or at the minimum, the purchase price of the asset. The heir could then easily determine their carryover basis in the asset, which is the same as the decedent's basis.

Currently, many valuation issues arise when a taxpayer dies because the heir receives a step-up basis equal to fair market value.[125] Determining fair market value is often difficult and time-consuming, especially for hard-to-value assets such as business interests and artwork.[126] The current step-up basis regime results in regular work for

https://taxfoundation.org/analysis-economic-revenue-distributional-effects-repealing-step-basis/.

[125] I.R.C. § 1014(a)(1) (2018).

[126] Alan Breus, *Valuing Art for Tax Purposes*, J. OF ACCT. (July 1, 2010), https://www.journalof accountancy.com/issues/2010/jul/20092096.html.

attorneys, appraisers, and CPAs to appropriately value the inherited assets.[127]

A carryover basis regime using blockchain would eliminate much of the valuation work because it would no longer be necessary to determine the fair market value of an asset. However, if any basis adjustments occurred during the decedent's lifetime that blockchain did not capture, attorneys, appraisers, and CPAs would still need to do some valuation work to determine the correct basis.

Finally, a carryover basis regime could also result in fewer IRS audits for heirs. Third parties are unable to corrupt or fraudulently change basis tracked in blockchain.[128] Assuming the decedent's basis was correctly entered into blockchain, the IRS should trust the basis without needing to audit the heir to verify basis. While there is a risk the recorder could have entered the decedent's basis incorrectly, the heir could still rebut or verify the recorder's records with additional documentation. Further, the heir could have the recorder fix a clerical error if discovered.[129] Additionally, a carryover basis regime would eliminate many of the IRS audits that heirs are subject to because determining fair market value would no longer be necessary. Calculating fair market value can be subjective and subject to IRS scrutiny, while carryover basis is more straightforward and easier to prove.[130]

3. Increased Demand for Blockchain Solutions

Increased demand for blockchain solutions would likely result if Congress implements a carryover basis regime for inherited assets. As previously discussed, blockchain would be an excellent solution to track the basis of assets and facilitate the transfer of assets to an heir upon the death of the decedent. Many companies are already creating blockchain solutions related to cryptocurrencies,[131] real estate,[132] artwork,[133] and gemstones.[134]

The growing popularity of blockchain is already spurring significant investment in blockchain technology.[135] In 2020, experts expect

---

[127] *Id.*

[128] Ross Mauri, *Blockchain for fraud prevention: Industry use cases*, IBM (July 12, 2017), https://www.ibm.com/blogs/blockchain/2017/07/blockchain-for-fraud-prevention-industry-use-cases/.

[129] Greenspan, *supra* note 105.

[130] *See* I.R.S. Publication 561 (Feb. 2020).

[131] *See Cryptocurrency List*, *supra* note 74.

[132] *See* PROPY, https://propy.com/browse/ (last visited Nov. 22, 2019).

[133] VERISART, *supra* note 84.

[134] TRACR, *supra* note 90.

[135] *See* Christo Petrov, *Blockchain Statistics: Understand Blockchain in 2020*,

spending on blockchain solutions in the United States to reach $4.2 billion.[136] Additionally, 90% of government agencies and organizations have plans to invest in blockchain technology, while 90% of banks are planning to implement blockchain solutions.[137]

A government mandate that heirs must use carryover basis would provide further incentive for businesses to invest in blockchain technology as nearly every United States citizen would benefit from such a solution. Many businesses are already investing in blockchain because they see the potential to save money or improve their operations.[138] These businesses, including banks or other financial service companies, could create blockchain solutions to track the basis of assets for individuals. A government mandate to use carryover basis would incentivize banks to offer blockchain recording as a service to their current clients, while other businesses may be able to entice individuals to pay for recording on the blockchain.

In 2018, Vermont was the first state to mandate blockchain recording for public records.[139] Vermont chose Propy, a real estate blockchain solution company, to create the state's blockchain recording system.[140] Vermont's public-private partnership with Propy is an example of how governments can partner with private companies to spur innovative blockchain solutions.

4. Disparate Impact on Low-Income Individuals

Although adopting a carryover basis regime would likely result in increased tax revenues and spur business investment in blockchain solutions, a carryover basis regime would likely have a disparate impact on low-income individuals. Many wealthy taxpayers can lessen or even eliminate their estate tax bills because they can hire sophisticated tax planning advisors.[141] Under a carryover basis regime, low-income or even middle-class individuals might incur a significant tax bill when they inherit and sell appreciated assets, a situation wealthy taxpayers may be able to avoid through tax planning. Further, wealthy taxpayers are more likely to use new technology, such as blockchain, to record

---

TECHJURY, https://techjury .net/blog/blockchain-statistics#gref (last updated Mar. 9, 2019).

[136] *Id.*

[137] *Id.*

[138] *Id.*

[139] *New Blockchain Law Passed in Vermont Following Propy's Successful Title Registry Project*, BUS. WIRE (Aug. 28, 2018, 6:55 AM), https://www.businesswire.com/news/home/20180828005249/en/New-Blockchain-Law-Passed-Vermont-Propy's-Successful.

[140] *Id.*

[141] *Policy Basics: The Federal Estate Tax*, *supra* note 6.

their assets while lower-income individuals will likely be slower to adopt, due to the high cost of new technology.

Despite the potential disparate impact on low-income individuals, there are a number of ways the government could mitigate this issue. First, Congress could permit step-up basis for heirs under a certain income threshold. For instance, Congress could draft a law permitting individuals to use step-up basis for an inherited asset if their adjusted gross income is less than $40,000. This type of law would benefit low-income taxpayers who inherit assets. However, as with any tax law that sets a threshold, such a law could create disincentives to earn more income if an individual has already inherited appreciated property or is expecting to inherit appreciated property during the tax year.

Another option is for the federal government to create a blockchain registry and provide free blockchain recording to all individuals or only low-income individuals. This solution would alleviate the cost of blockchain recording and make useful technology accessible to all income levels. However, a government-created blockchain registry would likely entail significant government spending and be developed slower than a private-industry blockchain solution.

Further, a government or corporate-managed blockchain would likely require an agency to verify the initial recording on the blockchain is correct.[142] The agency would verify that the individual has proper title and would also be responsible for reversing any fraud.[143] Although this process requires government agencies to continue verifying titles like they currently do, experts believe a blockchain system would be less expensive than the current title transfer systems in place.[144]

The government could also pay private-sector companies to create a blockchain solution. Vermont has already entered a public-private partnership with Propy to record the state's public records.[145] Vermont's partnership with Propy is an example of how the federal government could partner with private-sector blockchain businesses, although it would be on much larger scale. The U.S. government already has a platform, Challenge.gov, in which it incentivizes the public to assist government agencies in solving problems.[146] The U.S. government could utilize Challenge.gov to help develop blockchain solutions that would be available to all U.S. citizens. Further, this method would also stimulate private industry to develop a blockchain

[142] SWANSON, *supra* note 71, at 51.

[143] *Id.*

[144] *Id.*

[145] *New Blockchain Law Passed in Vermont Following Propy's Successful Title Registry Project*, *supra* note 139.

[146] *See* CHALLENGE.GOV, https://www.challenge.gov (last visited Oct. 20, 2019).

solution because the government would award prize money or potentially license the technology from the winning business.

IV. CONCLUSION

The arguments supporting step-up basis for inherited assets are no longer sound. Since fewer than one estate out of every thousand is subject to the estate tax,[147] concerns about double taxation are minimal. Further, current technology permits easy tracking of the decedent's basis. One technology that could facilitate a carryover basis regime is blockchain.

Blockchain is an ideal technology to facilitate a carryover basis regime because it is a "trustless" technology utilizing decentralized ledgers.[148] Information recorded on blockchain is extremely reliable because it is very difficult to corrupt or overwrite.[149] Currently, blockchain tracks certain real estate transfers, financial securities, artwork, and gemstones.[150] These existing blockchains or new blockchains could also track the basis of other assets that will eventually be inherited.

Using blockchain to facilitate a carryover basis regime would result in increased economic efficiency, more efficient transfers of assets upon death, and increased demand for blockchain solutions. A carryover basis regime would reduce the lock-in effect, leading to economic growth and investment in the most productive areas of the economy. Blockchain would also facilitate efficient transfers of assets upon death under a carryover basis regime because it reduces the amount of valuation work that CPAs, attorneys, and the IRS must perform.

However, the viability of blockchain as a solution depends upon incentivizing parties to record their transactions on blockchain and the availability of blockchain solutions. If Congress enacts a carryover basis regime, the new law would incentivize many individuals to record their assets on blockchain to make carryover basis easy to ascertain for their heirs. Further, a carryover basis regime would provide incentives for businesses to invest in blockchain technology since nearly every United States citizen would benefit from such a solution.

Inequality regarding the basis of inherited and gifted assets has existed in the tax code for years, costing the government billions of dollars.[151] Congress should enact a carryover basis regime and use the tools of the 21st century to facilitate the use of carryover basis.

---

[147] *Policy Basics: The Federal Estate Tax*, *supra* note 6.
[148] Kiviat, *supra* note 7, at 574.
[149] *Id.* at 577-80.
[150] *See supra* notes 76-89 and accompanying text.
[151] CONG. BUDGET OFFICE, *supra* note 1.

Blockchain is the ideal technology to facilitate a carryover basis regime because it is trustworthy and efficient. A carryover basis regime utilizing blockchain would be fair and efficient, and it would spur economic growth.