Policy Alternatives for Inducing Physical Capital Investment

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Executive Summary

A rising standard of living and a stable financial sector depend upon an economy's ability to maintain high long-term growth in real GDP. This long-term growth is dependent on many factors, but one of the most important is physical capital investment. United States' consumer preferences and tax codes are heavily biased against profitable physical capital investment, which scholars agree is constraining long-term growth in real GDP. Underlying this problem is the market failure of positive externalities. Firms are not fully compensated for the social benefits that their physical capital investments bring about. Similarly, investors are not fully compensated for lending the funds needed to finance these investments. To correct these market failures, federal lawmakers passed the Tax Cuts and Jobs Act in 2017. This law instituted three relevant policies: the 100% bonus depreciation, R&D expensing, and a reduced capital gains tax rate. Both the 100% bonus depreciation and R&D expensing allowed for firms to deduct certain investment costs from their taxable incomes immediately, removing inflation costs and partially compensating firms. The capital gains tax reduction increased the after-tax return of lending and thus partially compensated investors. However, only the capital gains tax rate reduction was made permanent. For this reason, this report will analyze whether making the 100% bonus depreciation permanent, making R&D expensing permanent, or further reducing the capital gains tax rate is the best method for inducing more physical capital investment in the U.S. moving forward. Each of these policies will be evaluated in relation to three relevant social goals: economic efficiency, an equitable distribution of added income, and balanced public budgets. This report ends by recommending R&D expensing as the most effective and preferable of these three policies.

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Policy Problem

The American people expect a rising standard of living over time, as well as financial sector stability. It is only by fostering long-term economic growth that the government can deliver on either of these expectations (Stone, 2017). Economists define long-term economic growth as the long-term growth rate of real GDP. Real GDP per capita reveals the value of goods and services the average American will receive in income in a given year (Kenton, 2024). A high real GDP growth rate will therefore raise the average income available to those in the economy over time, allowing citizens to attain increasingly higher standards of living. Furthermore, financial markets rely on borrowers making returns on their investments so that they can pay back lenders with interest (Stone, 2017). When the economy is not growing, a greater number of borrowers will not make positive returns and default on their loans. This threatens the solvency of lending institutions, which can completely paralyze the financial sector and cause economic recessions (Kenton, 2023a). By promoting high real GDP growth, the government can ensure borrowers continue to make their loan repayments and that financial markets remain stable.

There are many factors that determine the level of real GDP growth, but the most important factor is labor productivity growth (Antolín-Díaz et al., 2017). As labor productivity increases, the average worker can create more goods and services each day, expanding the economy and increasing real GDP. The growth rate of labor productivity is itself dependent on many factors, but one of the most important is physical capital investment (Ross, 2024). If firms are investing in supplying their workers with more or better tools, then over time the average worker will achieve a higher level of labor productivity and real GDP will rise. Examples of such physical capital investments include a shipping company purchasing a new fleet of delivery vehicles or an office purchasing desks and chairs for its workers. Most firms finance these

physical capital investments by taking on debt, expecting to make interest payments with the added revenue they generate. For this reason, firms base their investment decisions on opportunities' real rates of return: the investment's expected nominal rate of return minus the interest rate on the debt used to finance it (York, 2024). Rising interest rates therefore reduce the number of opportunities firms expect to make positive real rates of return and decrease the economy's overall level of physical capital investment.

Unfortunately, U.S. consumer preferences and tax codes are heavily biased towards consumption rather than saving (York, 2018). Additionally, financing large federal deficits requires the government to "crowd out" private businesses from accessing many of the funds that do end up being saved (Kenton, 2023b). These effects combine to reduce the supply of loanable funds left over in the economy for private borrowers. This ultimately raises interest rates and stifles physical capital investment (Kenton, 2023b). The Federal Reserve conducted a survey in 2023 which found that 40% of private businesses had reduced their physical capital investment spending due to high interest rates (Ross, 2024). This has been a recurring theme since the turn of the century. In fact, some researchers suggest that high interest rates, low physical capital investment, and sluggish labor productivity growth are the primary causes behind the fall of long-term real GDP growth from 3.5% in 2000 to 2% today (Antolín-Díaz et al., 2017).

Problem Framing

Underlying the lack of physical capital investments in the U.S. economy is the market failure of positive externalities (Weimer & Vining, 2017). From firms' perspective, they are not entirely compensated for the social benefits their investments in physical capital bring about. When these investments increase labor productivity across the economy, workers are able to demand higher incomes and capture some of the benefits for themselves (Stansbury & Summers,

2017). Additionally, the firm usually must pay back some of its return in interest payments to lending institutions. The result is that firms will see many investment opportunities as unprofitable and not undertake them, despite the fact that they would be seen as socially beneficial from a societal perspective (Weimer & Vining, 2017). This decreases physical capital investment from the socially optimal level.

Meanwhile, from investors' perspective, they are not entirely compensated for the social benefits their lending brings about. When a firm uses loaned funds to invest in physical capital, investors receive fixed returns based on interest rates. Any excess returns from increased labor productivity instead go to the firm or its workers. Because of this, many investors will prefer immediate consumption in instances where saving would be seen as socially beneficial from a societal perspective (Weimer & Vining, 2017). This depresses the supply of loanable funds, raises interest rates, and further decreases physical capital investment from the socially optimal level. These positive externalities reveal that, in the absence of government intervention, the free market will not invest in the socially optimal amount of physical capital. This justifies government intervention to incentivize either greater investment in physical capital or lower interest rates in the loanable funds market (Weimer & Vining, 2017).

Policy Goals

Given the underlying problem of positive externalities, the primary goal of any policy alternative should be to restore the loanable funds market to a socially optimal equilibrium by increasing the number of transactions that occur within it (Weimer & Vining, 2017). In practical terms, this means that the most socially efficient alternatives will be those that induce the most added physical capital investment. That said, the concept of economic efficiency extends far beyond just the loanable funds market. Also of interest is the efficiency of other markets in the

economy, specifically the competition that drives that efficiency. Economists have long recognized access to financing as a significant barrier to entry in most markets (Investopedia, 2022). For instance, large firms often receive low-interest loans that small firms cannot secure. This increases small firms' input costs and may prevent them from offering the same low prices that large firms do. In the same way, many policies in the loanable funds market can end up benefiting some firms over others. These firms can then use their financing advantage to create additional barriers to entry in their primary markets, reducing competition and economic efficiency across the economy (Weimer & Vining, 2017). Avoiding the creation of market entry barriers will therefore be another important objective in the analysis of policy alternatives' efficiency. This impact category can be operationalized as the equitable distribution of tax savings across firms in the loanable funds market.

Equity in a policy alternative's final distribution of wealth is also an important social goal to consider (Weimer & Vining, 2017). Ideally, greater physical capital investment eventually allows both firms to collect more profit and workers to demand higher pay. Unfortunately, strategic actors are often able to capture many of these benefits for themselves through rents. For example, firms are often able to exploit tax loopholes to enrich their shareholders without reinvesting in their workers as intended (Ohrn, 2023). These rents can worsen income inequality, preventing many people from achieving the higher standard of living that physical capital investments should theoretically bring about. Equity will therefore be operationalized in this analysis as an equal increase in income across the income distribution.

Finally, a policy alternative's impact on generating public revenue will be included as an important instrumental goal in this analysis. Given the current size of the federal budget deficit, politicians are very concerned with increasing revenues and decreasing spending (Weimer &

Vining, 2017). A policy alternative that generates revenue is therefore much more likely to pass into law than an alternative that greatly increases public spending. Since an alternative that has no possibility of becoming law cannot increase long-term real GDP growth, the public revenue impact of a policy is an important feasibility consideration.

Policy Alternatives

All the policy alternatives put forward in this analysis directly relate to the 2017 Tax Cuts and Jobs Act. The act had three components relevant to physical capital investment: the 100% bonus depreciation, the capital gains tax reduction, and expensing incentives for research and development (The Act, 2017). The 100% bonus depreciation deduction directly altered the tax treatment of firms' physical capital investments. Historically, such an investment would not have changed a firm's tax bill (Wamhoff & Phillips, 2018). If financed through profits, the investment would merely be considered a transfer of cash assets into equally valuable physical assets. Because the company's value had not changed, the profits used to purchase physical capital would still be subject to corporate taxes. If financed through debt, the liability of the loan and the value of the physical assets would cancel each other out, leaving both the firm's net value and tax bill unchanged. In either case, the firm would eventually be able to deduct losses from its taxable profits as that physical capital depreciated in value over time, although inflation would significantly reduce the real value of these deductions in later years (York, 2024).

Some scholars argue that firms viewed these inflationary effects on future deductions as a cost and subtracted them from the expected rate of return when considering investment opportunities (York, 2024). For example, if a firm was expecting a capital asset to lose its entire $100 value over the next ten years but would only be able to deduct $80 of this in real terms, then the taxes to be paid on the remaining $20 would be considered a cost of purchasing that

capital asset. The 100% bonus depreciation instead allows the entire costs of physical capital investments to be deducted from a firm' taxable profit immediately, thereby maximizing the present value of the deduction, eliminating inflation costs, and increasing the number of investment opportunities with an expected positive rate of return (York, 2024). The 100% bonus depreciation can also provide a benefit for firms that take on debt to finance physical capital investments: the ability to evade taxes by spending other people's money. If this benefit is large enough, firms may even find it profitable to invest in opportunities that otherwise have a negative expected real rate of return (Wamhoff & Phillips, 2018). Through these two effects, the 100% bonus depreciation increases the number of investment opportunities firms are willing to pursue, resulting in increased physical capital investment.

The Tax Cuts and Jobs Act also allowed firms to immediately deduct all research and development costs from their tax bill (The Act, 2017). Just like with physical capital investment costs, the government did not historically allow firms to deduct these costs immediately. Instead, firms were forced to spread their R&D spending deductions over a five-year amortization period (Ichniowski, 2024). Inflation would reduce the real value of these deductions in later years, thereby raising the firm's real tax bill and introducing inflation costs. By allowing firms to deduct R&D costs immediately, known as expensing, this policy eliminated these inflation costs and increased the real rate of return of investing in research. This was important because economists have long recognized the connection between firms' research investments and their physical capital investments (Spescha & Woerter). Research and development often reveals innovations like low-cost manufacturing methods or new goods and services. In order to take advantage of these innovations, firms must invest in new physical capital. By incentivizing increased R&D investment, this policy indirectly encourages added physical capital investment as well.

Finally, the Tax Cuts and Jobs Act lowered the personal capital gains tax rate from 21% to 20% and the corporate capital gains tax rate from 35% to 21% (The Act, 2017). This policy increased the expected after-tax real rate of return of all securities investments. For example, a firm interested in investing in government bonds with an expected payout of $100 each year would now net $79 each year after taxes rather than the $65 they would have under the previous tax rate. This encourages investors to save more in securities, increasing the supply of loanable funds, decreasing interest rates, and stimulating additional physical capital investment.

It is important to note that, of these three policies, only the capital gains tax reduction was made permanent. This means that making the 100% bonus depreciation or R&D expensing permanent will require an active policy decision. As such, these two policies are included as the first two alternatives in this analysis. Further decreasing the capital gains tax rate will also be considered a viable policy alternative. Because reducing the capital gains tax rate to 15% was a recent proposal put forward by Republican Party leaders, this will be the specific policy considered in this analysis (Ruben, 2020). Also note that, while each of these policies was included in the Tax Cuts and Jobs Act, they will be analyzed here as mutually exclusive alternatives. The first reason for this is that they all require billions of dollars in lost taxes every year. Giving up $25 billion in taxes to permanently institute the 100% bonus depreciation, for example, would prevent the government from using that same portion of the budget to finance further capital gains tax reductions. Additionally, most scholars argue that one of these alternatives is more effective than the others. Splitting $25 billion in lost taxes among all three alternatives is therefore inferior to solely financing the most preferable alternative alone.

Finally, each of these three policies will be contrasted with the effects of maintaining business-as-usual. In this scenario, capital gains taxes stay where they currently are, while the

100% bonus depreciation and research and development tax deductions are quickly phased out. This business-as-usual alternative is unique in that it would not require any resources to implement. In contrast, implementing any of the other three alternatives would create increased complications in how the government collects taxes. Effectively implementing these policies would therefore rely on the IRS being well-resourced, adaptable, and willing to implement them properly (Weimer & Vining, 2017).

Assessment of Alternatives

Since all three policy alternatives have been in effect in the U.S. since 2017, as well as utilized during other periods throughout the U.S.'s history, there is a sizeable body of literature from which one can estimate their impacts. As a result, it is fairly easy to identify how each policy will affect the three relevant policy goals. That being said, scholars have much disagreement over the magnitude of these effects. For example, some scholars argue that the 100% bonus depreciation is the most effective policy for increasing physical capital investment, while others argue that it results in few added benefits (Marr & DeBot, 2014; York, 2022). For each policy, the range of its possible impacts on each goal has been created based on the bounds of these scholarly debates. For an overview of these estimates, see the matrix in the appendix.

Beginning with the 100% bonus depreciation, almost all scholars agree with the theoretical conclusion that it increases physical capital investment. On one end of the extreme, there are many that assume that firms' decision-makers pay very close attention to calculating inflation effects and the real rate of return of physical capital investment opportunities (York, 2022). These scholars anticipate that by directly increasing this real rate of return, firms will be more willing to undertake physical capital investments. Evidence for these large effects typically comes from intricately designed microeconomic forecasting models, such as those from the Tax

Foundation. This organization predicts that making the 100% bonus depreciation permanent would increase physical capital investment by 2.2% each year (York, 2020). In nominal terms, a 2.2% increase in physical capital investment from 2022 levels would correspond to $48.33 billion of added U.S. capital stock. There is a small body of empirical literature that also supports these high expectations, mostly from the 2000s when the U.S. sporadically introduced 30% and 50% bonus depreciation deductions as temporary measures (Marr & DeBot, 2014).

Despite these findings and the microeconomic theory underlying them, most scholars actually see the 100% bonus depreciation as having little influence on firms' physical capital investment decisions. In the words of former Treasury Secretary Paul O'Neil, "I never made an investment decision based on the tax code. If you want to give me inducements for something I'm going to do anyway, I'll take it. But good business people don't do things because of inducements." (O'Neill, 2001). Most reports from the Congressional Research Service come to the same conclusion, with one report from 2018 concluding that every $1 of these tax deductions only increases firms' physical capital investment spending by $0.25 (Congressional, 2018). Given the Tax Policy Center's estimate that the 100% bonus depreciation would decrease public revenues by an average of $25 billion over the next ten years, this equates to only $6.25 billion in added physical capital investment annually – or a 0.32% increase over 2022 levels (Gleckman, 2022). Most empirical studies also come to this same conclusion (Williamson & Stutzman, 2016). These scholars argue that the studies from the 2000s that found large investment impacts from bonus depreciations were methodologically unsound, confusing changes in the timing of physical capital investments with actual increases in firms' willingness to invest (Hulse & Livingstone, 2010). Taken altogether, most scholars conclude that bonus depreciations do result in added physical capital investment but that these impacts are relatively small.

But even if the 100% bonus depreciation really is an effective way to induce physical capital investment, it would still have unwanted effects on market entry barriers and the distribution of income. Tax receipts consistently show that the tax savings of bonus depreciation deductions are concentrated in large firms with over $2 billion in annual revenue (Wamhoff et al., 2023). Almost all of these large firms claim bonus depreciation deductions each year they are available, compared to only around 50%-60% of small firms that do the same (Small, 2005). Small firms' lack of tax expertise, liquidity constraints, and tendency to sustain net operating losses explain this unequal distribution of benefits to scholars who believe in the efficacy of bonus depreciations (Small, 2005). For scholars who doubt the efficacy of bonus depreciations, this divergence instead offers more credibility to their argument. Small firms may not take the bonus depreciation because it does not induce them to make large physical capital investments, while large firms do utilize it because they invest in new physical capital each year anyway (Wamhoff et al., 2023). Whatever the reason, the result of this distribution is that large firms have access to investment opportunities with higher real rates of return while also paying lower corporate tax rates. Both of these results give them an advantage over smaller firms in their primary markets, making it more difficult for small startups to enter and compete effectively.

As for equity considerations, scholars agree that the income benefits of the 100% bonus depreciation tax breaks overwhelming flow to earners in the top 10% of the income distribution. For small firms, the added profits generated by this deduction flow to the firm's owners, who are likely to be in upper-income households (Congressional, 2018). In the case of large firms, studies show that much of the tax savings from bonus depreciation deductions are used to increase executive compensation. One study from 2023 found that every $1 in bonus depreciation tax breaks increased executive compensation by $0.17 to $0.25, which is almost as large a

relationship as the Congressional Research Service estimated between bonus depreciation tax savings and added physical capital investment (Ohrn, 2023). Most studies find no relationship between bonus depreciation tax savings and worker compensation (Garrett et al., 2020). Therefore, the leftover tax savings after executive compensation increases and added physical capital investment likely flow to large firms' shareholders – mostly income earners in the 90th percentile – through stock repurchases and dividends. For these reasons, bonus depreciation policies almost certainly increase inequality across the income distribution.

Moving onto the second policy alternative, expensing incentives for research and development, there is again little scholarly consensus on how this policy impacts physical capital investment. The first relationship of interest is how expensing incentives for research and development induce actual research and development investment. Studies initially began analyzing this question in the 1980s, estimating the relationship to be weak. According to a 1989 Government Accountability Office report, $1 of R&D tax savings generated only $0.15-$0.36 of added R&D spending (Muresianu & Watson, 2021). Over time, however, these estimates have grown. Even the most pessimistic studies since 2010 now find that $1 of R&D tax savings creates $2.08 of added R&D spending (Gupta et al., 2011). However, some scholars suggest that even these pessimistic estimates have gone too far. They argue that R&D expensing largely incentivizes firms to recategorize other costs as R&D costs. These scholars suggest that the actual added R&D investment induced by expensing is really 30%-50% below most estimates (Laplante et al., 2019). This would mean that, at the very least, every $1 of tax savings created by R&D expensing results in about $1 of added R&D investment. Given that Congress' Joint Committee on Taxation estimates that R&D expensing will decrease public revenues by $11.8 billion each year, this translates to at least a $11.8 billion increase in R&D spending (Muresianu

& Watson, 2021). On the other end of the spectrum, some studies have found that every $1 in R&D tax savings increases long-term R&D spending by $4 (Thomson, 2017). In this case, R&D expensing would induce $47.2 billion in added R&D spending annually.

The next relationship of concern, then, is how R&D spending is related to physical capital investment. Luckily, scholars have little disagreement on this topic. Almost all microeconomic theory and empirical observation conclude that R&D spending directly leads to increased physical capital investment, with most scholars agreeing that every $1 of R&D spending results in between $0.40 and $0.60 of added physical capital investment (Spescha & Woerter, 2021). This means that the low-end estimate of R&D expensing's impacts on R&D spending would result in at least $4.72 billion of added physical capital investment – a 0.21% increase over 2022 investment levels. The high-end estimate of R&D expensing's effects would at most result in $28.32 billion of added physical capital investment – a 1.29% increase over 2022 investment levels. However, it must be noted that these efficiency gains in the loanable funds market would come at the tradeoff of lower efficiency across the rest of the economy. Increased research and development innovation gives firms advantages over others in their primary market. This includes technological advantages over new competitors and patents which firms can utilize as a legal tool to deter new market entrants (Beneito et al., 2014). Allowing R&D expensing would therefore make it more difficult for new firms to enter most markets, reducing competition and efficiency across the rest of the economy.

When it comes to achieving equity, R&D expensing stands out as far and away the most preferable alternative. As has already been mentioned, firms reinvest almost all tax savings from R&D expensing back into R&D investment rather than executive pay or shareholder dividends. These investments then lead to innovations that increase labor productivity and allow workers to

demand higher wages. But that is not to say that executives and shareholders don't benefit. The innovations of R&D investment regularly create positive returns as well as advantages over other market competitors, both of which increase firm revenues. Studies show that many of these increased revenues become profits that are then distributed to executives and shareholders (Pianta & Tancioni, 2008). Additionally, R&D spending creates many spillover effects. Once an innovation is discovered, other firms or individuals may be able to build off of it to discover innovations of their own. Economists have long recognized that these spillover effects have positive impacts on productivity across the economy (Uğur et al., 2020). This allows other firms to generate more profits, as well as other workers to demand higher wages. Since every person in the income distribution is likely to benefit when firms invest in research and development, R&D expensing can be considered an equitable policy alternative.

Finally, consider the impact of reducing capital gains tax rates to 15%. This policy alternative is best thought of as a 5% reduction in capital gains taxes. Theoretically, this tax reduction will increase the after-tax rate of return of lending, which should increase the supply of loanable funds saved in the economy. Unfortunately, however, there are no empirical studies that can confirm this hypothesis. In the U.S., capital gains income is only taxed once an investor realizes gains by selling an asset (Fernando, 2024). This means that investors make investment decisions based on the capital gains tax they expect future realizations to be subject to, preventing researchers from drawing direct conclusions on how the current capital gains tax rates influence the supply of savings.

That being said, researchers have been able to study how changes in the capital gains tax rate have influenced investors' decisions to realize capital gains. According to the Congressional Research Service, all studies since 1990 have found that a 1% decrease in the capital gains tax

rate increases capital gains realizations by between 0.2% and 0.9% (Gravelle, 2020). If investors' willingness to realize capital gains is used as a proxy for their willingness to invest, then a 5% decrease in the capital gains tax rate can be expected to increase the economy's supply of loanable funds by between 1% and 4.5%. Next, the relationship between the supply of loanable funds and interest rates must be estimated. This relationship too has proven very difficult for researchers to estimate, largely due to how dependent it is on monetary and fiscal policy (Elmendorf, 1996). However, of those researchers who have sought to estimate this relationship through indirect methods, most find that a 1% increase in the supply of loanable funds reduces interest rates by between 0.3% and 0.5% (Boskin, 1978). These results mean that one can expect an increase in the supply of savings between 1% and 4.5% to decrease interest rates by between 0.3% and 2.25%. Finally, an excellent study from Lin et al. (2018) estimates that a 1% decrease in interest rates results in between a 0.39% and 0.906% increase in firms' physical capital investments. This means that a 2.25% fall in interest rates should at most result in a 2.04% increase in physical capital investment, while a 0.3% fall in interest rates should at least result in a 0.12% increase in physical capital investment. This provides us with realistic bounds for this policy's impact on physical capital investment. A capital gains tax reduction would also create increased efficiency across the economy by removing market entry barriers. Lower interest rates mean that firms can more easily access funding and enter new markets, increasing competition across the economy (Investopedia, 2022).

The difficulty in predicting investor decision-making also complicates the calculation of this policy's public revenue effects. According to Agersnap & Zidar (2020), a 5% reduction in the capital gains tax rate would reduce public revenues by between $18 billion and $30 billion a year, depending on how investors react in accelerating their capital gains realizations. Finally,

reducing the capital gains tax rate also comes with significant costs to income equity. According to the Tax Policy Center, the top 1% of income earners reported 75% of all personal capital gains in 2019 (Hendricks & Hanlon, 2020). Meanwhile, the reduction of the corporate capital gains tax would increase firms' profits without a subsequent increase in labor productivity. This policy alternative would therefore result in an extremely inequitable distribution of added income, with low and middle income earners receiving next to none of the immediate benefits.

Policy Recommendation

Since the range of plausible physical capital investment inducement effects for all three policy alternatives overlap so considerably, we cannot conclude for certain which would best increase efficiency in the loanable funds market. However, a closer look at these ranges does reveal insights. Starting with the 100% bonus depreciation, most scholars disagree with the large physical capital investment impacts some have put forward. Almost all empirical studies released since 2010 find that the effect of this policy on physical capital investment is close to zero. For this reason, we can assume that the true impact of the 100% bonus depreciation most likely lies somewhere closer to the 0.03% lower bound of its plausible impact range. The opposite is true of R&D expensing. Most scholars believe every $1 of tax incentives for R&D induces R&D spending closer to, or perhaps even beyond, the $4 upper bound used in this analysis. This means that the true impact of R&D expensing on physical capital investments probably lies somewhere closer to the 1.29% upper bound of its plausible impact range. Finally, the analysis of the capital gains tax reduction involved multiple steps of calculation, each of which scholars are deeply divided on. It would therefore be inappropriate to skew our analysis towards either end of its plausible impact range. I therefore conclude that R&D expensing is the most likely policy alternative to significantly increase physical capital investment, while the 100% bonus

depreciation is the least likely. Also, given that R&D expensing is the least costly alternative and the 100% bonus depreciation is likely the most costly alternative, I conclude that R&D expensing would likely be the most cost-effective alternative. Meanwhile the 100% bonus depreciation would likely be the least cost-effective. Although, again, a case can be made for any of the three alternatives being both the most impactful and the most cost-effective.

The 100% bonus depreciation alternative also performs poorly in pursuing both the goal of economy-wide efficiency and the goal of equitably distributed income. Implementing this policy would create entry barriers in all markets and divert most income gains to the top 10% of income earners. For this reason, I consider the 100% bonus depreciation to be the most inferior policy alternative. Turning to the capital gains tax reduction and R&D expensing, both of these alternatives have mixed impacts on the supplemental policy goals. The capital gains tax deduction would be highly inequitable – distributing income gains to only the top 10% of income earners – while R&D expensing would give some firms advantages that create market barriers.

However, it is important to remember that R&D expensing creates positive spillover effects as well. Economists expect that these effects would increase labor productivity and economic efficiency in other markets, thereby partially offsetting some of this policy's negative efficiency impacts. It is highly likely, then, that R&D expensing's negative impact on efficiency would be much smaller than a capital gains tax reduction's negative impact on equity. To recap, then: R&D expensing is the most likely alternative to significantly increase physical capital investment; it is the only alternative with an equitable impact on the income distribution; its positive spillover effects will help to cancel out any market entry barrier inefficiencies it creates; and it is by far the least costly of the three alternatives put forward. For these reasons, I recommend R&D expensing as the most preferable policy alternative.

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Appendix

		Policy Alternatives			
Goals	***Impact Category***	**<u>Policy 1:</u> Business as Usual**	**<u>Policy 2:</u> 100% bonus depreciation**	**<u>Policy 3:</u> expensing incentives for research and development**	**<u>Policy 4:</u> 5% capital gains tax reduction**
Efficiency	Added annual physical capital investment	**Ø**	**0.32% – 2.2%**	**0.21% – 1.29%**	**0.12% – 2.04%**
	Creation of market entry barriers	**No**	**Yes**	**Yes**	**No**
Equity	Effects on the distribution of income	**None**	**Inequitable**	**Equitable**	**Inequitable**
Feasibility	lost public revenue (per year)	**Ø**	**$25 billion**	**$11.8 billion**	**$18 – $30 billion**