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Taxation Of Artificial Intelligence Solutions – A Chinese Approach

Yapay Zeka Çözümlerinin Vergilendirilmesi - Çin Yaklaşımı

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A N A H T A R K E L İ M E L E R

Teknoloji Vergilendirme
Otomasyon Vergilendirme
Çin Vergilendirme
Yapay Zeka
Robot Vergilendirme

Ö Z

Yapay zekanın (YZ) hızlı büyümesi, hükümetleri düzenleyici ve vergi politikaları yoluyla ekonomik, sosyal ve etik etkilerini ele almaya teşvik ediyor. Çin'de YZ, yüksek teknoloji işletmeleri için indirimli kurumlar vergisi oranları, Ar-Ge gider kesintileri ve YZ ile ilgili yazılım hizmetlerinde KDV muafiyetleri gibi vergi teşvikleri ile inovasyon stratejisinin merkezinde yer almaktadır. Shenzhen ve Hangzhou gibi bölgesel merkezler, sübvansiyonlar ve vergi tatilleri yoluyla YZ büyümesini daha da desteklemektedir. Bununla birlikte, YZ şirketleri karmaşık vergi kodları, uyum maliyetleri ve sınıflandırma belirsizlikleri gibi zorluklarla karşı karşıyadır. Küresel olarak, YZ vergilendirme tartışmaları, "robot vergileri", otomasyon vergileri gibi çözümleri araştırmakta ve adil katkılar sağlarken azalan insan istihdamından kaynaklanan gelir kayıplarını ele almak için kurumlar vergisi yapılarını uyarlamaktadır. Alternatifler arasında, işletmelerin işgücü azaltımı için vergilendirilmesi veya insan işe alımına öncelik verilmesi için kredi sağlanması yer almaktadır. Etkili YZ vergilendirme politikaları, tarafsızlık, basitlik ve gelecekteki değişimlere uyarlanabilirlik sağlayarak yenilik, sosyal eşitlik ve ekonomik sürdürülebilirliği dengelemelidir. Bu çalışma, Çin'in YZ vergi çerçevesini bu küresel bağlamda incelemektedir.

K E Y W O R D S

Technology Taxation
Automation Tax
China Taxation
Artificial Intelligence
Robot Tax

A B S T R A C T

The rapid growth of artificial intelligence (AI) is prompting governments to address its economic, social, and ethical impacts through regulatory and tax policies. In China, AI is central to its innovation strategy, with tax incentives like reduced corporate income tax rates for high-tech enterprises, R&D expense deductions, and VAT exemptions on AI-related software services. Regional hubs such as Shenzhen and Hangzhou further support AI growth through subsidies and tax holidays. However, AI companies face challenges like complex tax codes, compliance costs, and classification ambiguities. Globally, AI taxation debates explore solutions like "robot taxes," automation levies, and adapting corporate tax structures to address revenue losses from reduced human employment while ensuring equitable contributions. Alternatives include taxing businesses for workforce reductions or providing credits for prioritizing human hiring. Effective AI taxation policies must balance innovation, social equity, and economic sustainability by ensuring neutrality, simplicity, and adaptability to future shifts. This paper examines China's AI tax framework within this global context.

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1. Introduction

The intersection of automation, mainly through artificial intelligence (AI) and ensuing tax policy, is an emerging and complex field. Research on this subject remains in its infancy despite AI's profound implications for economic structures and the taxation of labour and capital. The financial efficiency brought by AI extends beyond simple productivity gains. It influences national income distributions, wage dynamics, and the design of tax systems to incentivize innovation and entrepreneurship. Simultaneously, governments are compelled to explore innovative forms of taxation due to the disruptive potential of AI while ensuring revenue collection for social services etc.

AI stands at the centre of the digital transformation defining the socio-economic norms within the 21st century and beyond. The AI deployment pace and mechanisms vary across regions and industries. Public and private policymakers face the challenges of determining the role of AI for taxation purposes. Key challenges include designing taxes on labour and capital to promote AI-driven growth while minimizing social harm, such as economic inequality, privacy breaches, and algorithmic bias.

While AI offers efficiency and cost-saving benefits, its challenges require careful tax policy interventions. Tax policies targeting AI can be effective when coordinated on a regional, multi-jurisdictional or global level. The rapid pace of AI innovations also complicates the creation of timely and effective bilateral tax disclosure agreements between jurisdictions. Due to these challenges, public policymakers are likely to respond reactively, imposing taxes after harmful effects manifest. This ad hoc approach risks being slow and inconsistent, potentially undermining global efforts to manage AI's socio-economic impacts (Clarke, 2019; Cheng & Zeng, 2023).

Taxation on AI can potentially address several economic and social challenges. Governments can impose taxes on capital income generated from the use of AI to offset declining labour-driven income and rising wealth inequality. Such measures require careful economic and political analysis on the part of public policymakers. Literature suggests that policymakers' views are often informed by high-profile incidents or growing evidence of AI's harmful socio-economic effects. Such policies would fund essential social services such as senior citizen care, child benefits, social housing, and education while addressing disparities exacerbated by AI's economic disruption (Chen & Tillmann, 2021).

AI benefits can be assured and broadly shared by measures that can help prevent societal fractures and maintain social stability. Timing is critical in tax policy adjustments as a response to disruptive technologies such as AI. Governments are known to act reactively, often driven by political expediency rather than strategic foresight. Imposing an AI tax expeditiously can enable wealth redistribution to fund crucial societal needs. The timely action for AI taxes must align with a broader strategy to mitigate AI's disruptive effects and enhance societal well-being. AI taxation could also be pivotal in shaping the "future of work." Part of the AI Tax proceeds can go toward retraining workforce development initiatives. Governments can ensure that technological advancements bolster, rather than undermine, human welfare. However, precipitous taxation risks stifling innovation and creating stakeholder resistance (Erdélyi & Goldsmith, 2018).

Implementing effective AI taxation is fraught with challenges. AI technologies' rapid and unpredictable evolution makes it difficult to design policies that adhere to neutrality, simplicity, and fairness. Overly aggressive taxation could deter innovation across critical fields, from healthcare to environmental science, diminishing AI's benefits. Moreover, AI taxation risks exacerbating economic uncertainty and could hinder society's ability to harness AI's transformative potential. Governments must navigate these challenges carefully, balancing the need to mitigate harm with the imperative to encourage progress (Gill, et al., 2022).

AI represents both an opportunity and a challenge for policymakers, particularly in the context of taxation. Western governments face mounting pressures to address unemployment, wealth disparities, and societal tensions exacerbated by AI's disruptive potential. Institutions that have historically maintained social cohesion are increasingly strained, and AI could further destabilize these foundations. As governments grapple with these issues, proactive and nuanced policies are essential. Taxation may be a tool to redistribute AI-generated wealth and address societal imbalances, but it must be implemented thoughtfully to avoid stifling innovation. The ultimate goal is to ensure that AI strengthens human welfare and promotes a peaceful, balanced society (Clarke, 2019). This article explores China's tax regulations related to AI, highlighting incentives, compliance requirements, and challenges for companies operating in this sector.

2. China Enterprise Income Taxation Law

The Law of the People's Republic of China on Enterprise Income Tax (EIT), promulgated on March 16, 2007, and effective from January 1, 2008, establishes a framework for enterprise income tax. It applies to incorporated enterprises in China that generate income but excludes individual proprietorships and partnerships. Enterprises are classified as resident or non-resident, with resident enterprises taxed on global income and non-resident enterprises taxed on income from within China. The standard tax rate is 25%, with a reduced rate of 20% for certain non-resident enterprises. Taxable income is determined by subtracting allowable deductions, such as costs, losses, and public welfare donations (up to 12% of annual profits), from gross income, which includes income from sales, services, investments, and royalties. Certain incomes, like government appropriations, are exempt. Specific rules

govern deductions, including depreciation and amortization, and restrict deductions for items like fines and unrelated expenses (People's Republic of China, 2024).

Losses may be carried forward for up to five years. Special provisions address taxation for non-resident enterprises and financial methods inconsistent with tax laws, ensuring compliance with established regulations. The Order of the President of the People's Republic of China No. 63, promulgated by President Hu Jintao on March 16, 2007, officially announces the adoption of the Law of the People's Republic of China on Enterprise Income Tax (EIT) during the Fifth Session of the Tenth National People's Congress. Effective January 1, 2008, this law established the legal framework for EIT in China. It applies to enterprises and other organizations earning income within China, except for individual proprietorships and partnerships (PWC, 2024).

The law categorizes enterprises as resident or non-resident, defining their tax obligations based on their administrative location and the origin of their income. Resident enterprises are subject to income tax on their global earnings, while non-resident enterprises are taxed on income generated within China. The standard tax rate is 25%, although a reduced rate of 20% applies to certain non-resident enterprises under specified conditions. Taxable income is determined by deducting allowable expenses, such as costs, fees, losses, and public welfare donations (up to 12% of annual profits), from gross income, which includes earnings from goods sales, labour services, investments, royalties, and other sources. Certain types of income, such as government appropriations, are exempt from taxation. The law also details the criteria for deductions, depreciation of fixed assets, amortization of intangible assets, and allowable expenses while excluding specific items like fines and non-relevant costs.

Additionally, enterprises may offset losses incurred within a tax year against profits in subsequent years for up to five years. Special provisions address non-resident enterprises' income tax calculations and the treatment of financial practices inconsistent with tax laws. The law comprises eight chapters, covering general provisions, taxable income calculations, preferential tax policies, tax withholding, special tax adjustments, and administrative procedures, ensuring a comprehensive and structured approach to enterprise income taxation in China (Chen, He, Liu, Serrato, & Xu, 2021).

Articles 2, 3, and 4 of China EIT, classify enterprises (incorporations) as either resident or non-resident. Resident enterprises are those established within China following its laws or those founded under the laws of foreign countries but effectively managed by institutions in China. Conversely, non-resident enterprises are those incorporated under foreign laws, with their seats of management outside China. Non-resident enterprises either maintain operations within China or derive income from within China with foreign seats of administration. Resident enterprises are subject to enterprise income tax on their local and worldwide income, encompassing domestic and foreign earnings. Non-resident enterprises with operations in China are taxed on income derived from their Chinese establishments, including income from abroad attributable to these establishments. Tax is levied solely on income generated within China for non-resident enterprises without establishments in China or when income is unrelated to their Chinese operations. The standard enterprise income tax rate is 25%, while income specified under the third paragraph of Article 3 for non-resident enterprises is subject to a reduced rate of 20%.

China EIT explains taxable income in Articles 5 through 9. Article 5 stipulates that taxable income for each tax year is the gross income of an enterprise minus the untaxed and tax-exempt amounts, allowable deductions, and prior-year losses eligible for offset. Article 6 defines gross income for all monetary and non-monetary earnings from various sources, including income from goods sales, labour services, property transfers, equity investments (such as dividends and bonuses), interest, rentals, royalties, donations, and other sources. Certain types of income are designated as untaxed under Article 7, which include government appropriations, administrative fees, government funds collected according to EIT Law and managed by the government, and other untaxed income specified by the State Council. Article 8 permits enterprises to deduct reasonable expenses related to earning their income, such as costs, fees, tax payments, and losses. Article 9 further allows deductions for donations made for public welfare purposes, provided these do not exceed 12% of the enterprise's annual profits. These provisions collectively ensure a comprehensive and precise approach to determining the taxable income of enterprises operating within China.

Articles 10 and 11 of China's EIT Law outline specific expenses that are not deductible when calculating taxable income and detail rules for deducting depreciation of fixed assets. Article 10 identifies non-deductible expenses, including equity investment payments to investors (such as dividends and bonuses), enterprise income tax payments, fines for delayed tax payments, losses from penalties, fines, and property confiscations, donations outside the scope defined in Article 9, sponsorship costs, non-verified reserves, and other expenses unrelated to income generation. These exclusions ensure that deductions are limited to expenses directly associated with income production and compliance with tax regulations (Li, Wang, & Wu, 2020).

Article 11 permits enterprises to deduct fixed asset depreciation costs, provided these are calculated in line with relevant regulations. However, specific fixed assets are excluded from this deduction, such as unused houses and structures, fixed assets subleased for profits, those rented out through financial leasing, fully depreciated but still operational fixed assets, assets unrelated to business activities, separately valued land recorded as fixed assets, and other categories specified by law. These provisions establish clear boundaries for allowable depreciation

deductions, ensuring consistency and accuracy in tax calculations. Articles 12 and 13 detail the rules for calculating taxable income related to amortized expenses. Under Article 12, enterprises may deduct amortized expenses for intangible assets if these calculations adhere to relevant regulations. However, certain intangible assets are excluded from deductions, including those whose development costs have already been accounted for during taxable income calculations, self-created goodwill, assets unrelated to business operations, and other intangible assets ineligible for amortization deductions. Article 13 permits enterprises to deduct anticipated long-term amortized expenses, provided they are amortized according to the relevant regulations. These include costs associated with reconstructing fully depreciated fixed assets, reconstructing leased fixed assets, conducting significant repairs on fixed assets, and other expenses identified as anticipated long-term amortized costs.

Articles 14 through 18 outline specific rules for calculating taxable income and handling deductions for enterprises. According to Article 14, an enterprise may not deduct the cost of investments made in the form of assets during the period of external investment when calculating taxable income. Article 15 states that the inventory cost intended for use or sale may be deducted, provided it is calculated per relevant regulations. Article 16 allows an enterprise to deduct the net value of transferred assets when determining taxable income. Article 17 specifies that losses incurred by an enterprise's business institutions outside China may not be offset against profits generated by its business institutions within China for income tax purposes.

Article 18 permits an enterprise to carry forward losses incurred in a tax year to subsequent years, allowing these losses to be offset by future income. Still, the carryover period is limited to a maximum of five years. Articles 19 through 21 establish the rules for calculating taxable income for non-resident enterprises and address the handling of financial methods related to taxation (STA General Office, 2024). Article 19 specifies that non-resident enterprises must calculate taxable income based on the nature of the income. The total amount of income is considered taxable for equity investments, such as dividends, bonuses, interest, rent, and royalties. For income from property transfers, the taxable amount is the remainder after deducting the net value of the property from the total income. Taxable amounts are calculated by applying similar methods for other types of income. Article 20 provides that the specific scope of deductible income, criteria for deductions, and tax administration procedures regarding assets shall be determined by the financial and taxation authorities under the State Council. Article 21 states that if an enterprise's financial and accounting methods conflict with tax laws and administrative regulations, the calculation of taxable income must comply with those laws and regulations (People's Republic of China, 2024).

Articles 22 through 24 establish the methods for calculating taxable income and the rules for offsetting income tax paid outside China. Article 22 states that an enterprise's taxable income is determined by multiplying the taxable income by the applicable tax rate and then subtracting any tax reductions, exemptions, or offsets provided under the preferential tax policies outlined in this law. Article 23 allows enterprises to offset income tax paid outside China on specific types of income against the tax payable for the current period. This includes taxable income earned outside China by resident enterprises and by non-resident enterprises with establishments in China, provided the income is linked to those establishments. The offset amount is limited to the tax payable on the income as calculated under this law, and any excess may be carried forward and offset against taxes in the next five years. Article 24 further permits resident enterprises to offset income tax on dividends and bonuses from foreign enterprises under their control. The offset includes the income tax the controlled foreign enterprises paid outside China and must align with the offset limits specified in Article 23.

Articles 25 through 27 outline the preferential tax policies implemented by the State to support and encourage specific industries and projects. Article 25 emphasizes that the State provides tax incentives for industries and projects that receive significant government support and are prioritized for development. Article 26 specifies income exempt from tax categories, including interest on government bonds, dividends and bonuses from equity investments between qualified resident enterprises, dividends and bonuses received by non-resident enterprises with establishments in China connected to such establishments, and income earned by qualified non-profit organizations. Article 27 provides for tax exemptions or reductions on income derived from certain activities, such as farming, forestry, animal husbandry, and fisheries; investments in and operation of State-supported infrastructure projects; qualified projects focused on environmental protection, energy conservation, or water conservation; income from qualified technology transfers; and other income as specified under Article 3 of this Law.

Articles 28 through 32 outline various preferential tax policies to support specific enterprises, activities, and investments. Article 28 establishes reduced income tax rates for qualified enterprises: small enterprises with low profits are taxed at a reduced rate of 20%. In comparison, high-technology enterprises requiring key State support are taxed at a reduced rate of 15%. Article 29 allows the autonomous authorities of national autonomous regions to reduce or exempt the portion of enterprise income tax allocated to local governments. However, exemptions or reductions at the prefecture or county level require approval from higher-level provincial, regional, or municipal authorities. Article 30 permits weighted deductions for specific expenses when calculating taxable income, including research and development costs for new technologies, products, or techniques and wages paid to disabled employees and other individuals encouraged by State policies. Article 31

provides that investment ventures in pioneering projects prioritized by the State may offset taxable income by a certain proportion of their investment amount. Lastly, Article 32 allows enterprises to accelerate the depreciation of fixed assets when necessary due to technological advancements or other justifiable reasons, either by reducing the depreciation period or adopting accelerated methods.

Articles 33 through 36 outline additional preferential tax policies to encourage environmentally friendly practices, economic development, and flexibility in response to national needs. Article 33 allows enterprises to deduct income earned from manufacturing products that comprehensively utilize resources and comply with State industrial policies when calculating taxable income. Article 34 provides that enterprises investing in special equipment for environmental protection, energy, and water conservation or safe production may offset a portion of their tax payable based on a specified ratio. Article 35 determines that the State Council is responsible for formulating detailed preferential tax policies as this law outlines. Article 36 grants the State Council the authority to develop special preferential tax policies in response to national economic and social development needs or significant unforeseen events impacting business activities, with the requirement to submit such policies to the Standing Committee of the National People's Congress for record-keeping.

Articles 37 to 40 outline regulations on tax withholding for income earned by non-resident enterprises in China. Article 37 mandates that income tax on such earnings, as described in Article 3, must be withheld at the source by the income provider, who acts as the withholding obligor. Payment of the withheld tax is required at the time or when the payment is due. Article 38 extends this obligation to income derived from engineering operations or labour services, allowing tax authorities to designate the payment provider as the withholding obligor. Article 39 stipulates that if the withholding obligor fails to fulfil their duty or cannot withhold taxes, the taxpayer must pay the tax where the income is generated. Should the taxpayer neglect this duty, tax authorities are empowered to recover the tax from paying the taxpayer for other projects in China (People's Republic of China, 2024).

Article 40 requires the withholding obligor to remit the tax to the Treasury within seven days of withholding and submit a corresponding enterprise income tax return to the local taxation authority. Articles 41 to 48 address the adjustment of special tax payments for enterprises involved in affiliated business transactions. Article 41 empowers tax authorities to adjust if transactions between an enterprise and its affiliate deviate from the arm's-length principle, reducing taxable income. Costs related to the joint development or transfer of intangible assets or services must align with independent transaction principles for taxable income calculation. Article 42 allows enterprises to propose pricing principles and calculation methods for affiliate transactions, potentially leading to an advance pricing agreement after consultation with tax authorities. Article 43 requires that enterprises must include a statement of affiliate transactions in their annual tax returns and provide relevant information during tax investigations. Article 44 grants tax authorities the right to verify taxable income if an enterprise fails to disclose or provides false or incomplete affiliate transaction data. Article 45 requires profits of foreign-controlled enterprises with low tax burdens to be included in the income of resident enterprises if such profits are not distributed for reasons unrelated to legitimate business needs (STA General Office, 2024).

Article 46 disallows interest expense deductions when affiliates' bond or equity investments exceed prescribed ratios. Article 47 enables tax authorities to adjust taxable income when enterprises adopt plans that do not serve legitimate business objectives. Finally, Article 48 stipulates that additional taxes and interest may be imposed following tax adjustments, per State Council regulations. Articles 49 to 52 outline the administration of enterprise income tax levying and collection in China. Article 49 states that in addition to EIT law, tax administration complies with the provisions of China's Law on the Administration of Tax Collection. Article 50 specifies that resident enterprises must pay tax at their registration location or, if registered outside China, at the location of their actual administrative institution. Resident enterprises with non-legal personal branches in China must consolidate income tax calculations and payments (Law of China, 2019).

Article 51 states that non-resident enterprise income for purposes of Paragraph 2, Article 3, are required to pay tax where their enterprises are registered. Establishments with multiple in China may, with the tax authority's approval, designate one as the headquarters for consolidated tax payment. Non-resident enterprises earning income under Article 3, Paragraph 3 must pay tax at the registered location. Article 52 prevents enterprises from consolidating tax payments with other locations unless explicitly authorized by the State Council. Articles 53 to 56 define the rules for calculating, reporting, and settling enterprise income tax in China. Article 53 establishes that the tax year spans from January 1 to December 31. The actual operating period is the tax year for enterprises starting or ceasing operations during a tax year. During liquidation, the liquidation period is treated as the tax year.

Article 54 requires enterprises to prepay income tax monthly or quarterly, submitting prepayment returns within 15 days after the end of each period. Annual returns for consolidated tax payments are due within five months after the tax year ends, accompanied by financial statements and relevant information. Article 55 mandates that enterprises terminating operations during a tax year must settle taxes within 60 days of cessation. Before deregistering, enterprises must file a final tax return and pay any outstanding taxes. Article 56 stipulates that taxes are calculated in Renminbi, with foreign currency income converted accordingly for tax payment. These provisions

ensure systematic tax calculation, collection, and compliance for enterprises operating in China (STA General Office, 2024).

Articles 57 to 59 provide supplementary provisions for implementing China's EIT law. Article 57 allows enterprises established before the law's promulgation that benefit from preferential tax rates or exemptions to transition gradually to the prescribed rates or continue enjoying their benefits under regulations set by the State Council. The period begins from the law's effective year for enterprises with unused preferential periods due to lack of profits. High-tech enterprises in zones designated for economic and technological exchange and newly established areas with special policies may receive transitional preferential tax treatment, with details determined by the State Council. Encouraged enterprises confirmed by the State may also qualify for tax exemptions or reductions under relevant State Council regulations. Article 58 establishes that provisions in international tax agreements between China and other countries precede the law if inconsistencies arise. Article 59 authorizes the State Council to formulate regulations to implement the law. These provisions aim to balance transitional benefits for existing enterprises with the broader goals of the new tax regime while respecting international agreements.

3. Fostering AI Development- Special AI Taxation in China

The rapid development of artificial intelligence (AI) has prompted governments worldwide to establish regulatory frameworks addressing its economic, social, and ethical impacts. AI is central to China's innovation-driven development strategy. Chinese AI tax policies have evolved to encourage growth and ensure appropriate revenue collection from this burgeoning industry. The Chinese government has identified AI as a core industrial and technological advancement driver. The State Council's 2017 "Next Generation Artificial Intelligence Development Plan" set ambitious goals to make China a global leader in AI by 2030. This strategic importance has led to favourable policies, including tax incentives, to stimulate AI research and application (Kim, 2023).

China offers several tax incentives to promote AI innovation and adoption.

These policies target key players in AI, including research institutions, startups, and established technology firms. The High-Technology Enterprise (HTE) legal status enables AI companies to qualify as HETs, to benefit from an EIT rate of 15% compared to the standard EIT rate of 25%. There are additional deductions for R&D expenses such as 200% of qualifying expenditures that can be deducted from taxable enterprise income. Startups in the AI space can take advantage of various preferential policies offered in innovation hubs such as Beijing, Shanghai, and Shenzhen, which aim to foster growth and innovation in the sector. These policies include exemptions from value-added tax (VAT) for specific AI software services and subsidies designed to offset tax liabilities, particularly for small and micro-enterprises focusing on AI research.

Moreover, the government provides targeted support for AI applications in key sectors like healthcare, manufacturing, and transportation. This includes tax reductions on the import of advanced equipment essential for AI research and development, along with VAT exemptions for the sale of AI-driven technologies in agriculture and education, further encouraging the integration of AI into diverse industries and enhancing its role in driving technological advancement (Čejková, 2023).

Despite the numerous incentives available, AI companies operating in China must navigate a complex tax landscape encompassing various obligations. As explained earlier, EIT is set at a standard rate of 25%, but businesses benefiting from AI preferential policies must maintain meticulous documentation to prove their eligibility. Value-added tax (VAT) applies to AI-related products and services, ranging from 6% for software services to 13% for hardware and equipment. However, companies can reduce their overall tax liability by claiming input VAT credits. Additionally, foreign AI companies that provide technology services or license intellectual property to Chinese entities face withholding tax, typically 10%, with potential reductions under double taxation agreements. The Individual Income Tax (IIT) system imposes progressive rates from 3% to 45% for AI professionals, particularly expatriates. However, specific allowances like housing and education may qualify for exemptions, easing the overall tax burden.

China's decentralized governance enables local authorities to provide additional tax incentives tailored to regional priorities, fostering innovation and growth in AI ecosystems. Cities such as Shenzhen and Hangzhou, known for their dynamic AI industries, have introduced tax holidays for new AI startups and local subsidies to support research and development personnel. However, despite these efforts, the AI industry in China encounters several challenges in navigating tax regulations. One major issue is the ambiguity in defining AI-related activities, which complicates tax classification. Additionally, the compliance burden is significant, as companies must compile and maintain extensive documentation to qualify for tax benefits, consuming considerable resources. Furthermore, the global nature of AI operations introduces complexities in aligning China's tax policies with international frameworks, including the OECD's guidelines on digital taxation, creating potential hurdles for companies operating across borders.

China's approach to AI taxation is anticipated to evolve in alignment with ongoing technological advancements and international trends, paving the way for several potential developments. One possibility is the introduction of AI-specific taxation measures designed to address the disruptions caused by automation and robotics in traditional industries. At the same time, there may be an increased focus

on incentivizing environmentally sustainable AI technologies through tax breaks, reflecting China's commitment to achieving its carbon neutrality goals. Additionally, enhanced cross-border tax coordination could emerge as a priority, fostering collaboration with global tax bodies to harmonize rules governing AI-related income generated across multiple jurisdictions.

AI companies in China must adopt strategic approaches to navigate the country's complex tax landscape effectively. Staying informed about regulatory changes at national and local levels is crucial as tax policies evolve with technological advancements. Companies should also proactively identify and leverage available tax incentives, particularly those targeting R&D and innovation activities, to optimize their financial position. Additionally, investing in compliance is essential; this includes maintaining meticulous records and collaborating with tax advisors to ensure adherence to stringent documentation requirements. These steps will help companies remain agile and competitive in a dynamic regulatory environment.

China's tax regulations for AI demonstrate the government's dedication to promoting innovation while maintaining economic accountability. By effectively utilizing available incentives and adhering to tax requirements, AI companies can secure a foundation for sustainable growth in one of the most dynamic markets globally. As AI continues to revolutionize industries, China's regulatory & tax framework is expected to evolve in tandem, offering opportunities and challenges for businesses navigating this transformative era. Before exploring the various options for taxing AI and robots, it is crucial to emphasize that any such tax proposal should be grounded in a solid policy rationale and adhere to well-established tax policy principles, such as those outlined in the Ottawa E-Commerce Tax Framework.

4. Ottawa E-Commerce Framework & Global AI Tax Initiatives

Ottawa E-Commerce Tax Framework is particularly relevant as OECD countries and beyond have adopted the framework in their e-commerce tax strategies. The first principle of the framework addresses neutrality, meaning that a tax should apply universally and not discriminate between electronic and conventional commerce. While achieving complete neutrality is challenging, introducing a new tax should aim to minimize distortions. The second principle, simplicity or certainty, is closely tied to the third principle of efficiency. A new tax must be straightforward to apply, as excessive complexity can result in higher compliance costs for taxpayers and tax authorities. In this context, efficiency should not be confused with the economic concept of efficiency related to the location of production or output factors. The fourth principle, effectiveness, and fairness requires that the tax system enables the government to collect the correct amount of taxes at the right time while minimizing opportunities for tax evasion and avoidance and reducing the potential for profit shifting. The fifth principle of flexibility ensures that the tax system can adapt to meet the government's current and future revenue needs. It is important to note that no single principle should be prioritized over the others. Instead, a balance must be struck among them.

Taxing AI and robotics have gained significant attention in recent years, particularly following remarks by Bill Gates, co-founder of Microsoft, in 2017. In an interview with Quartz, Gates sparked the debate by questioning why robots performing the same work as human employees wouldn't be taxed similarly (Kovacev, 2020). He pointed out that human workers who earn, for example, $50,000 in a factory, are subject to income tax and social security contributions and suggested that robots should face the same level of taxation if they replace human workers. Some commentators propose that AI and robots should be treated as separate taxable entities, to ensure that state revenues are not significantly impacted. For income tax purposes, one suggestion is to treat AI or robots as individual taxpayers, while another proposal is to classify them as taxable legal entities.

In indirect taxation, particularly VAT, there have been proposals that if AI and robots are granted legal personality and tax capacity, they could also be considered taxable persons and, therefore, subject to VAT.

The proposal for taxing AI and robots suggests that the technology owner should be held responsible for paying the taxes associated with its use. These taxes would be based on fictional salaries attributed to the AI or robots, with these salaries being deemed equivalent to what a human worker would earn performing the same task. The salary would be determined by comparing it to similar wages in the market. This approach would help neutralize the loss of tax and social security revenue caused by automation. For this system to be effective, the legislation would need to recognize a relationship between the AI/robot and its owner, akin to the employer-employee relationship, which could require changes to labour laws.

Some political figures have put forward similar proposals to tax imputed income for robots. For example, Bill de Blasio, Mayor of New York, advocated for a federal robot tax during his 2020 Democratic presidential campaign. His proposal would require companies that replace workers with automation to pay an amount equal to five years' worth of payroll taxes for each worker displaced. Additionally, de Blasio proposed the creation of a regulatory body, the Federal Automation and Worker Protection Agency (FAWPA), to oversee advanced robotics and AI. In Canada, the Green Party also proposed a robot tax in 2019, suggesting that companies replacing workers with machines must pay a tax equivalent to the income tax the laid-off employees would have paid (Merola, 2022).

An object tax could be levied on the ownership of a robot, either through a flat rate or one that varies based on the type of robot, similar to how assets are taxed in certain jurisdictions. However, this approach's main challenge is

treating robots as property, typically applied to tangible assets lacking autonomy or intelligence. This creates a conflict with the rationale for taxing robots in the first place. Since robots are intelligent machines capable of replacing human labour, the argument is that they should be taxed as subjects—like humans—rather than as objects.

This distinction raises the question of whether robots, due to their capabilities, should be considered taxable entities like people. Many jurisdictions currently offer tax advantages to companies that invest in technology and acquire machines to enhance efficiency and productivity. According to the latest data from the OECD, several countries have reinforced corporate tax incentives to encourage innovation, such as allowing the deductibility of invested capital for tax purposes. In some cases, these measures can facilitate the replacement of human workers. One potential solution to slow down this automation-driven displacement of workers could be to eliminate or restrict such tax advantages based on a reported level of automation within a company.

In 217 South Korea became the first country in the world to pass a robot tax law. South Korea is renowned for its high-level use of robotics within its various industries. South Korean Robot Tax is aimed at slowing down the growth of automation in the country. Previously, companies were allowed corporate tax deductions ranging from 3% to 7% of their investment, depending on the business size. The Robot Tax reduced the deduction rate to 2%. Dimitropoulou, in analyzing the South Korean tax system, pointed to the Robot Tax as a measure to limit tax incentives for businesses using technologies such as AI and robots that closely substitute human labour (Joseph & Falana, 2021).

Vincent Ooi and Glendon Goh proposed "reverse depreciation," which aims to adjust tax incentives based on the level of human workforce replacement caused by automation. According to their proposal, companies adopting automation as a complementary function, meaning those replacing few or no human workers, would be allowed to deduct higher amounts related to capital expenditure. On the other hand, companies whose automation investments result in significant human workforce replacements would be allowed to deduct only a small portion of their capital investment. This proposal seeks to balance the promotion of innovation with the need to mitigate the societal impact of widespread job displacement.

An alternative to the "robot tax" concept is increasing corporate income tax rates for businesses that heavily automate their operations. The rationale is that companies replacing human workers with AI and robots are expected to become more productive, leading to higher profits. Consequently, these businesses would be taxed more due to their more considerable taxable income, increasing government revenue. This approach would shift the tax burden from labour to capital, encouraging companies to balance automation with human employment.

Another potential approach is the implementation of automation taxes, specifically aimed at businesses that reduce their workforce by replacing employees with AI and robots. The goal of these taxes would be to discourage mass layoffs and the widespread replacement of human workers. One way to structure such a tax could involve charging employers for unemployment insurance based on their human employment rate. In other words, the more employees a company lays off or replaces with automation, the higher the taxes they would be required to pay. This system would compensate for the unemployment caused by automation, ensuring that companies contributing to workforce displacement help fund the support needed for displaced workers. An agency could be established to manage this system, collecting data on layoffs and workforce replacements, which would then be shared with tax authorities to inform tax assessments.

Another potential approach to taxing automation is the concept of a corporate self-employment tax, which would increase the tax burden on companies that produce goods or provide services without relying on human labour. This model is analogous to the self-employment tax imposed on individuals in certain jurisdictions, where small business owners must contribute to social security, similar to the taxes paid on their wages if they were employees. The primary goal of this tax is to generate additional revenue to support workers displaced by automation. One method of calculating this tax could involve using a ratio of corporate profits to gross employee compensation expenses. If this ratio exceeds a government-set threshold, additional taxes could be levied on the company's profits, reflecting the amount the company has avoided paying by replacing human labour with automation. Alternatively, a sales ratio could be used instead of a profit ratio.

An alternative proposal to discourage excessive investment in automation is to extend tax benefits to companies that hire people. These benefits could include reductions or exemptions from social contributions or payroll taxes, such as those levied on Medicare systems. Another possible benefit is the super-deduction of wages paid to human workers. These measures would ensure that human employees and machines are treated similarly for tax purposes, or at least in a comparable way, as machines do not receive wages subject to taxation. At the same time, many jurisdictions grant accelerated tax deductions for technology investments aimed at increasing productivity.

Another solution that has been proposed involves introducing narrowly targeted taxes. For example, in 2017, the Grand Council of the Canton of Geneva in Switzerland proposed a tax on automated cashiers in the retail sector, defined as any device that allows customers to pay for their purchases without the intervention of store personnel. While this proposal was rejected, it highlights the concept of taxing specific types of automation. Similarly, in 2018, San Francisco enacted AB1184, which imposed a tax on rides provided by autonomous vehicles, applying a tax of up to 3.25% of net rider fares for a ride and 1.5% for shared rides.

Both proposals focus on taxing specific automation or services rather than imposing a general tax on AI or robots. Such taxes aim to create a direct link between the tax imposed and the remediation of job losses caused by automation, ensuring that the funds collected help mitigate the economic impact on displaced workers (Pavlova & Knyazeva, 2022).

Sam Mitha suggests a proposal for taxing the value added by implementing AI and robots based on the idea that these technologies are expected to make companies more profitable. According to this proposal, businesses would need to monitor the value generated through AI and robots, and any additional value-added would be subject to a higher VAT rate. Alternatively, Mitha proposes that companies whose turnover ratio to the number of employees exceeds a predetermined threshold could also be subject to an increased VAT rate on the goods and services they provide. Another option mentioned is disallowing VAT input on automation-related purchases, effectively limiting the tax benefits businesses can receive from investing in automation technologies.

5. Conclusion

The rapid development of artificial intelligence (AI) has driven governments worldwide to address its economic, social, and ethical implications through regulatory frameworks, with tax policies playing a pivotal role. In China, where AI is a cornerstone of its innovation strategy, the government has implemented various tax incentives to stimulate AI research and development while ensuring revenue collection. These include reduced corporate income tax rates for qualifying High-Technology Enterprises, substantial R&D deductions, and VAT exemptions for AI-related software services and technologies.

Regional policies in cities like Shenzhen and Hangzhou further bolster these efforts through tax holidays and subsidies for startups and research institutions. Despite these benefits, AI companies face challenges navigating China's complex tax system, including compliance burdens and ambiguities in defining AI activities. Globally, the taxation of AI and robots has sparked debates, with proposals ranging from taxing AI as separate entities to imposing automation-specific levies or adjusting existing corporate tax structures to offset job displacement caused by automation. Notable suggestions include robot taxes, automation taxes, and value-added taxation linked to AI-generated value, aiming to neutralize revenue loss from reduced human employment and promote equitable economic contributions. Proposals such as limiting tax incentives for automation, taxing companies based on reduced workforce levels, or rewarding human hiring through tax breaks also seek to balance innovation with societal needs. These frameworks align with neutrality, simplicity, and fairness, ensuring flexibility to adapt to future technological and economic developments. As AI continues to evolve, its integration into global taxation systems will necessitate careful consideration of innovation, equity, and sustainability to foster growth while addressing the disruptive impacts of automation.

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