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China's Golden Tax Project:

A Technological Strategy for Reducing VAT Fraud

Jane K. Winn* & Angela Zhang**

Abstract:

Unlike the United States, where sales tax is a common form of indirect tax, almost all countries around the world—both developed and developing alike—now impose a value added tax (VAT). In the early 1990s, as part of its comprehensive economic reform program initiated over 30 years ago, the People's Republic of China implemented a VAT. Monitoring compliance with VAT is a serious challenge in developing countries, and China is no exception in that regard. To address this challenge, China launched a major fiscal reform project called the "Golden Tax Project" (GTP) which mandates the use of specific sophisticated information technologies to improve compliance with China's VAT laws. Although the Chinese GTP requires the use of information technology which can be considered as a form of "e-invoicing", the focus is on creating a centralized matching system under the control of the tax authorities to reduce the incidence of fraud. In the EU, by contrast, the 2009 Report by the Expert Group on e-invoicing focused on strategies for increasing the voluntary adoption of e-invoicing technologies among taxpayers in order to make EU businesses more competitive. The Chinese policy requires stronger central controls than the EU policy, and includes strin-

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gent, new mandatory taxpayer duties, so it would not be suitable for use in developed economies with relatively high rates of voluntary compliance. The Chinese GTP strategy might provide a useful model for other developing countries struggling with large-scale, widespread VAT compliance problems, however.

Text:

I. INTRODUCTION

In 2009, this advertisement for fake tax invoices, printed on a 2-inch by 3½-inch sticker, was stuck to the sidewalk near Dagu South Road in Tianjin [Pinyin transliteration and English translations have been added]:

> 刻章办证上网发票 (Ke Zhang Ban Zheng Shang Wang Fa Piao)
>
> [Make chops Manage certificates Internet access Invoices]
>
> 136-2208-6552
>
> 代开医院门诊票住院票机打票(Dai Kai Yi Yuan Men Zhen Piao Zhu Yuan Piao Ji Da Piao)
>
> [Outpatient invoice Inpatient invoice Machine printed invoice][1]

These stickers are a familiar sight in Chinese cities—they have been stuck to the sidewalk by criminal enterprises in the business of printing fake diplomas, certificates, invoices and other business documents. Given the patently illegal nature of the services being advertised, the phone numbers are only temporary mobile numbers that cannot easily be traced. The value of the fake invoices depends on how they are used: phony invoices for medical treatments may be used to obtain fraudulent reimbursements for medical expenses, while phony business expense invoices may be used to evade taxes.

The widespread use of such stickers to advertise illegal services highlights a problem that China shares with most other developing coun-

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[1] On August 8, 2009, the mobile phone number listed on the sticker had already been disconnected. The original sticker is on file with the authors.

tries: the difficulty of increasing compliance with modern regulations, including tax laws. This paper will focus only on tax law as an example of modern regulation and only on one type of tax law in particular: value-added tax (VAT). In the early 1990s, the PRC adopted a VAT system as part of a sweeping package of fiscal reforms.[2] A VAT system requires businesses to pay tax on the difference between their revenues represented by invoices they have issued, less their expenses represented by the invoices of other enterprises they have paid.[3] The phony business expense invoices being advertised in the sidewalk stickers are presumably being used by legitimate businesses to fraudulently evade their VAT obligations.

Since China adopted the VAT system, tax authorities have responded with a variety of strategies to deal with the problem of large-scale VAT invoice fraud. One early strategy was to criminalize the activity and make it subject to the death penalty.[4] From time to time, Chinese authorities have launched campaigns to crack down on this form of

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[2] *Provisional Regulations on Value-added Tax* (1993, P. R. C.); for a description of China's fiscal reforms in the early 1990s, see generally, 刘佐(Liu Zuo),《新中国六十年税收大事辑选》(Important Events of Taxation During the Past Sixty Years in the PRC),《中国税务》, No. 10, 2009, pp. 4, 8—9; Barry Naughton, *The Chinese Economy: Transitions and Growth*, The MIT Press, 2007, p. 103; Jinglian Wu, *Understanding and Interpreting Chinese Economic Reform*, Texere, 2005, pp. 269—274.

[3] For an overview of the design and administration of VAT systems, see generally, Liam Ebrill, Michael Keen, Jean-Paul Bodin, and Victoria Summers, *The Modern VAT*, International Monetary Fund, 2001; Richard M. Bird and Pierre-Pascal Gendron, *The VAT in Developing and Transitional Countries*, Cambridge University Press, 2007.

[4] Article 205 of the PRC Criminal Law (1997) sets out that where offenders issue fraudulent VAT Special Invoices or other invoices used in the cheating of export VAT refunds or claiming input VAT credits, the offenders shall be sentenced to up to three years of imprisonment or criminal detention together with a criminal penalty ranging from RMB 20,000 to RMB 200,000. If the amount involved is large or the circumstances are serious, the offenders shall be sentenced to three to ten years of imprisonment together with a criminal penalty ranging from RMB 50,000 to RMB 500,000. If the amount involved is huge or the circumstances are serious, the offenders shall be sentenced to an imprisonment of more than 10 years or life imprisonment together with a criminal penalty ranging from RMB 50,000 to RMB 500,000 or confiscation of property. Article 32 of the Eighth Amendment to the PRC Criminal Law (1997) deletes the provision of "If the criminal offenders have swindled state property and the amount involved is huge and the circumstances are serious and have resulted in significant losses to the state, the criminal offenders shall be sentenced to life imprisonment or the death penaltyor confiscation of property". As set out in article 206 of the PRC Criminal Law, where offenders forge or sell fake VAT

fraud, rounding up phony invoice vendors and executing them.[5] For example, in connection with VAT invoice fraud carried out in Chaoyang and Puning in Guangdong Province, 30 convicted of VAT fraud were given life sentences and 17 were given death penalties in 2001.[6]

While executing phony invoice vendors may briefly capture headlines in China, the policy has been controversial even in China.[7] The modern theory of criminal law suggests that the deterrent effect of a law is determined by the expected value of the punishment, which is determined by the probability of enforcement action being taken, and not simply the absolute severity of the sanction.[8] Given the low probability of the death penalty being applied even during an enforcement campaign, it should not be surprising that even harsh criminal penalties appeared to be having little deterrent effect in China. The enforcement goal of modern regulation is usually described as "optimal deterrence" or minimizing the harm of violations at the lowest administrative cost.[9] While harsh criminal penalties may be one significant PRC tax

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Special Invoices, the offenders shall be sentenced to up to three years imprisonment, criminal detention or criminal control together with a criminal penalty ranging from RMB 20,000 to RMB 200,000. If the amount involved is large or the circumstances are serious, the offenders shall be sentenced to three to ten years of imprisonment together with a criminal penalty ranging from RMB 50,000 to RMB 500,000. Where the amount involved is huge or the circumstances are very serious, the offenders shall be sentenced to an imprisonment of more than 10 years or life imprisonment together with a criminal penalty ranging from RMB 50,000 to RMB 500,000 or confiscation of property. Article 34 of the Eighth Amendment to the PRC Criminal Law (1997) deletes the provision of "where offenders forge and sell fake VAT Special Invoices, the amount involved is extremely huge and the circumstances are extremely serious (which has seriously damaged the economic order), the offenders shall be sentenced to life imprisonment or the death penalty together with confiscation of property.

[5] 吕冰心(Lv Bingxin),《虚开增值税专用发票之罪》(Criminal Offence of Issuing Fraudulent VAT Special Invoices),《法人》,No. 1,2007.

[6] Li Heng, China's Biggest Tax Fraud Comes to Light, 19 Sentenced to Death, at http://english.people.com.cn/english/200111/01/eng20011101_83672.html.

[7] 李虎子(Li Huzi),《虚开增值税专用发票罪若干问题探析》(Analysis of Certain Issues Concerning Criminal Offence of Issuing Fraudulent VAT Special Invoices),《河南公安高等专科学校学报》No. 4, 2007. 张智辉(Zhang Zhihui),《虚开增值税专用发票罪死刑当废》(Death Penalty on Issuing Fraudulent VAT Special Invoices Should Be Cancelled),《法制日报》2003. 7. 3.

[8] Anthony Ogus, *Regulation: Legal Form and Economic Theory*, Hart Publishing, 1994, p. 91.

[9] *Id.*, p. 90.

compliance strategy, it is not the only one. In an effort to increase overall rates of compliance with its tax laws in a cost-effective manner, China has developed some novel strategies.

During the same time that the VAT system was adopted, PRC tax authorities also launched the "Golden Tax Project" (GTP) which mandates the use of specific sophisticated information technologies to improve compliance with China's VAT laws. The goal of the GTP is to construct a centralized invoice clearing system that will permit the PRC tax authorities to detect and reject fake invoices in real time, and to quickly and accurately identify and apprehend the culprits issuing them.[10] The GTP was launched in 1994. The first two phases were completed in 2000 and 2003 respectively, and in 2009 the final phase was nearing completion.[11] If the GTP succeeds, then phony VAT invoices may soon cease to be one of the products offered by phony document merchants in China.

Although the significance of the GTP may not be obvious in the U. S., which remains the only major developed economy in the world to reject VAT and continue to use sales tax, it might be obvious to other developing countries struggling with large-scale, widespread VAT compliance problems. In any VAT system, some form of control over the issuance and use of business expense invoices is essential to controlling tax fraud controlling. As businesses that are liable for VAT migrate their administrative systems from paper to electronic systems, tax authorities around the world are struggling with the question of how to permit the use of electronic VAT invoices without increasing the risk of tax fraud.

Although there is no universally accepted definition of "electronic invoice" (e-invoice), in this article, the term will be defined as the automated process of issuing, sending, receiving, and processing invoice

〔10〕 程丹(Cheng Dan),《金税工程(二期)征管效益综合评价研究》(Comprehensive Evaluation and Study of the Golden Tax Project (Phase II)'s Collecting and Administering Efficiency) (2006), Dissertation for Masters Degree in Management of Harbin Institute of Technology.

〔11〕 Golden Tax Project, *China Daily*, August 25, 2009, at http://www.chinadaily.com.cn/language_tips/60th/2009-08/25/content_8614902.htm.

data by electronic means.[12] In recent years, tax authorities in many jurisdictions that have adopted VAT have become interested in e-invoicing for two reasons: first, reliable electronic systems for generating and storing VAT invoices might lower the cost of monitoring taxpayer compliance, and second, more widespread use of the kind of sophisticated business information systems capable of generating invoices automatically might increase the global competitiveness of local businesses.[13] If e-invoicing systems can accommodate both goals, then the result would be increased efficiency for both public and private sector actors handling VAT invoices. However, whether both public and private goals for migrating paper VAT invoice systems to electronic systems can be achieved simultaneously is unclear. What is clear is that in designing the GTP, Chinese tax authorities have focused their attention almost exclusively on the public goal of increasing compliance with VAT laws, while tax authorities in Europe have directed much more attention to achieving the private sector goal of increased efficiency of local business operations.[14]

While the Chinese approach to increasing VAT compliance may appear coercive and rigid to foreign observers, and some domestic commentators have expressed concerns about coordination, maintenance, and information security issues,[15] it also represents an innovative blend of information technology and administrative reform designed to support

〔12〕 Helmstone Electronic Invoicing Services Glossary, at http://www.helmstone.co.uk/services_eInvoicing_Glossary.aspx.

〔13〕 See generally, DG Internal Market and DG Enterprise, Final Report of the Expert Group on e-invoicing, November 2009 (hereinafter EU Expert Group Report), at ec.europa.eu/enterprise/sectors/ict/files/finalreport_en.pdf.

〔14〕 Trustweaver, Electronic Invoicing In and With China—Briefing Note, March 31, 2009, at www.streamserve.com/upload/China_summary.pdf; *EU Expert Group Report*, supra note 13.

〔15〕 吴晓宇(Wu Xiaoyu),《影响金税工程若干技术问题》(Some Technical Problems Affecting the Operation of GTP),《涉外税务》, No. 1, 2003, pp. 19—25. 2003 (with four subsystems, network coordination will be difficult; the system is not designed to promote the use of e-invoicing among taxpayers; monitoring at different levels of government and not in real time creates vulnerabilities that could be exploited by criminals; computer security requirements are not fully integrated into the system or its administration, e.g., it is unclear what the consequences would be for losing a GTP identity card; some of the software and hardware are based on older designs that may be less resilient than newer designs; a change in management procedures may not be sophisticated enough to accommodate changes in tax law and policy).

China's transition from a centrally planned economy to a regulated market economy. The Chinese government had an acute need to replace the funding sources lost through market reforms to the central planning system in the absence of a political culture supporting voluntary compliance with tax laws.[16] While the degree of central government control over the collection and use of electronic tax records mandated by the GTP might be unacceptable in any developed market economy, other developing countries facing a similar need to increase tax revenues to support modern government functions but lacking effective enforcement mechanisms or a local culture of voluntary tax compliance may find the Chinese approach better suited to the conditions they face.

This article will first contrast the general provisions governing treatment of electronic records under the U. S. tax laws with the more specific law reforms in Europe and China aimed at increasing the use of sophisticated information technologies in the administration of VAT by public and private entities. Next, the design and implementation of the GTP will be examined in detail. Finally, the questions of whether the PRC government might gradually shift the focus of its VAT e-commerce policy from increased compliance to increased adoption of EU-style e-invoicing and whether GTP might be used as a model for other developing countries to increase VAT compliance rates will be considered.

Ⅱ. BACKGROUND: ELECTRONIC RECORDS AND INDIRECT TAXES IN THE U. S. AND EU

The first modern VAT was adopted in France in 1948. The idea gradually spread to other countries in Europe with widespread adoption around the world occurring during the last two decades.[17] In 2010, 140 countries had adopted some form of VAT, while the U. S. remains the only leading industrialized nation that has not.[18] Several factors ac-

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〔16〕 Barry Naughton, *The Chinese Economy: Transitions and Growth*, The MIT Press, 2007, p. 103; Jinglian Wu, *Understanding and Interpreting Chinese Economic Reform*, Texere, 2005, pp. 269—274.

〔17〕 Liam Ebrill, Michael Keen, Jean-Paul Bodin, and Victoria Summers, *The Modern VAT*, supra note 3, pp. 4—6.

〔18〕 2010 WTD 84-40 KPMG Report Reviews Global State of Indirect Taxation, release date April 1, 2010 (Doc 2010-9507), *Worldwide Tax Daily*, May 3, 2010.

count for the growing popularity of VAT regimes: VAT offers a strategy for increasing public revenues without significantly affecting economic growth; it is simpler to administer than the older indirect tax regimes it replaces; and it has been widely promoted by multilateral organizations such as the EU (which requires accession states to adopt VAT), and the IMF by encouraging voluntary VAT adoption with technical assistance and requiring VAT adoption through loan conditionality.[19] The idea of adopting a VAT administered by the U. S. federal government has never enjoyed enough popular support in America to achieve adoption due to the historical tradition of granting local governments control over sales tax rates and the conservative opposition that associates the imposition of a VAT with the expansion of government programs. As a result of the crisis in U. S. public sector finances that followed in the wake of the global financial crisis, however, the idea of a VAT appears to be gaining more popularity recently in the U. S.[20]

A. U. S. Electronic Record Tax Regulations

A sales tax can be defined as a tax on gross receipts from the sale or lease of tangible personal property as well as certain services.[21] In the U. S., sales taxes are administered by local government, and play a pivotal role in financing local government activities. As with other taxes on business activities, businesses subject to sales tax laws are under a duty to retain records relevant to their calculation of the tax due.[22] The duty to preserve records arises in connection with the tax authority's power to audit the taxpayer to confirm the taxpayer's calculation of the amount of tax due. The law establishing the tax liability will normally

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[19] KPMG, Driving Indirect Tax Performance: Managing the Global Reform Challenge (2010), pp. 6—8, at http://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/Documents/DITP-Managing-the-global-reform-challenge.pdf.

[20] N. Gregory Mankiw, Much to Love, and Hate, in a VAT, *New York Times*, May 2, 2010, p. 6 (quoting Paul Volker, head of President Obama's economic advisory board, as saying that a VAT was not as "toxic" an idea as it used to be).

[21] David T. Brown, Note: No Easy Solutions in the Sales Tax on E-Commerce Debate: Lessons from the Advisory Commission on Electronic Commerce Report to Congress, 27 *Iowa J. Corp. L.* 117 (2001).

[22] Rev. Code Wash. (ARCW) § 82.32.070 (2010); NY CLS Tax § 1135 (2010); see generally Timothy P. Noonan, Recordkeeping Duties for Sales and Use Tax, *Lexis NY Tax* P.I. 1,552 (2010).

provide guidance regarding which documents should be preserved, in what form, and for how long.[23] Sales taxes are administered by at least 7,588 separate local taxing authorities in the U. S. and each authority can establish its own standards regarding the creation and retention of records by taxpayers.[24]

Given the lack of standardization among thousands of different taxing jurisdictions for sales taxes, federal law may provide a more general overview of tax policy regarding the creation and retention of electronic records for tax purposes. For example, the federal Internal Revenue Code of 1986 and corresponding treasury regulations require U. S. income taxpayers to keep such records and comply with such regulations as the federal tax authorities deem necessary to show whether the taxpayer is liable for tax.[25] Federal income-tax laws generally do not impose a particular system of accounting on taxpayers, but allow each taxpayer to adopt such accounting systems as are suitable to the taxpayer's requirements.[26]

American taxpayers began to seek guidance from U. S. tax authorities regarding the acceptability of computer records for tax audit purposes since computers came into widespread use by U. S. businesses. In 1971, the first federal guidance was issued stating that, "punched cards, magnetic tapes, disks, and other machine-sensible (e. g., computer-readable) data media used for recording, consolidating, and summarizing accounting transactions and records within a taxpayer's auto-

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[23] *Id.*

[24] Richard Thompson Ainsworth, The Digital VAT, 25 *Va. Tax Rev.*, p.875 (2006).

[25] 26 C. F. R. § 1.6001-1(a) generally mandates that the taxpayer "keep such permanent books of account or records ... as are sufficient to establish the amount of gross income [or] deductions" of the taxpayer. According to 26 C. F. R. § 1.6001-1(d), "The [IRS] district director may require any person, by notice served upon him, to make such returns, render such statements, or keep such specific records as will enable the district director to determine whether or not such person is liable for [the applicable] tax." According to 26 C. F. R. § 1.6001-1(e), "The books or records required by this section shall be kept at all times available for inspection ... and shall be retained so long as the contents thereof may become material in the administration of any internal revenue law." 26 C. F. R. § 1.446-1 (a)(4) provides that "Each taxpayer is required to make a return of his taxable income for each taxable year and must maintain such accounting records as will enable him to file a correct return."

[26] Jane K. Winn & Benjamin Wright, *The Law of Electronic Commerce*, § 19.08 (2001, supp. 2010).

matic data processing system are records within the meaning of section 6001 of the [Internal Revenue] Code and section 1.6001-1 of the regulations[27] and are required to be retained so long as the contents may become material in the administration of any internal revenue law."[28]

Under U.S. tax law, invoices are not subject to the same kind of special rules that apply to invoices in VAT jurisdictions, so the analysis has focused more generally on the use of business records in electronic form to demonstrate compliance with tax laws. U.S. businesses began to adopt electronic invoices as a form of business record in the 1980s with the growth of "electronic data interchange" (EDI) systems.

While EDI contracting was popular among large businesses with sophisticated information systems, the difficulty and expense of EDI technologies made them unpopular with most businesses, which limited the scope of the problem of determining the status of e-invoicing under the law of countries with VAT systems. For companies voluntarily adopting e-invoicing systems based on EDI, the cost of maintaining parallel electronic invoicing systems for management use and paper invoices for tax purposes may have been clearly outweighed by the business benefits of adopting EDI. This was because EDI systems have generally been most popular with some global multinationals that are able to achieve major efficiency gains from adopting them. Those large, sophisticated companies normally insist that their smaller trading partners also use EDI, although adoption for smaller, less sophisticated companies often produces few efficiency gains. EDI adoption by small firms may actually increase rather than reduce their overhead, which they must absorb as a necessary cost of doing business with larger, more powerful trading partners; for such small firms, maintaining parallel electronic and paper invoice systems would merely be an element of that cost.

The U.S. Internal Revenue Service (IRS) supplemented its 1971 guidance with a revenue procedure targeting taxpayers with more than $10 million in assets in 1986. Revenue Procedure 86-19 imposed much more detailed requirements on the design, documentation and use of

[27] *Supra* note 25. [26 C.F.R. § 1.6001-1 (a) generally mandates that the taxpayer ...]

[28] Rev. Rul. 71-20, 1971-1 C.B. 392.

"automated data processing" (ADP) systems to ensure that records retained for tax purposes were in a retrievable format that provided the information necessary to audit the taxpayer.[29] In 1991, the IRS issued Revenue Procedure 91-59 to deal with the use by taxpayers of electronic data interchange (EDI), which is defined as "the computer-to-computer exchange of business information."[30] Revenue Procedure 91-59 established a flexible standard permitting the taxpayer to make reasonable choices about the use of new technology in generating and storing tax records, and made it clear that the taxpayer was not required to retain paper records with the same information if a paper copy of the record could be generated on request. The taxpayer was also required to ensure that the data processing system had reasonable controls to prevent unauthorized modification or loss of tax records. In the event of an audit, the taxpayer would bear the burden of convincing auditors that reasonable controls had been implemented; however, a taxpayer could ask the local I. R. S. office to review its system and confirm the reasonableness of its controls prior to an audit. Revenue Procedure 91-59 also referenced guidelines issue by the National Archives and Record Administration (NARA)[31] for the maintenance and storage of electronic records. In 1997, the I. R. S. issued Revenue Procedure 97-22 authorizing the destruction of paper originals if a taxpayer had established an electronic system that met specified standards and that had been tested for functionality and reliability.[32] Revenue Procedure 97-22 was drafted to avoid obsolescence and permit businesses to make reasonable choices about information system design by using the highly general term "electronic storage system." In 1998, Revenue Procedure 91-59 was replaced by Revenue Procedure 98-25[33] which restated and updated many of its provisions. Revenue Procedure 98-25 explicitly provided that records management policies and procedures are business decisions solely within the discretion of the taxpayer.[34]

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[29] Rev. Proc. 86-19, 1986-1 C. B. 558.
[30] Rev. Proc. 91-59, 1991-43 I. R. B. 23.
[31] See 36 C. F. R. ch. XII, subch. B, pt. 1234, subpt. C (1996).
[32] Rev. Proc. 97-22, 1997-13 I. R. B. 1.
[33] Rev. Proc. 98-25, 1998-11 I. R. B. 7.
[34] *Id.*, § 9.01.

This summary of the evolution of federal tax policy regarding the retention of electronic records for federal income tax purposes shows the evolution in the attitudes of federal tax authorities toward the migration away from paper records. Early rulings were more cautious in spirit, and often more detailed and prescriptive in content. As the market for business information systems matured and as tax auditors gained experience auditing electronic records, the guidance became more flexible, and explicitly granted more autonomy to the taxpayer in the design and operation of business information systems. In recent years, as a result of the early controversy surrounding the use of electronic records and the significant evolution of standards imposed on American taxpayers during years of dialogue between tax authorities and taxpayers, there has been little or no controversy in the U. S. surrounding the use of electronic records for tax purposes. By contrast, efforts to harmonize local sales tax regimes in order to require out-of-state vendors to collect and remit sales tax have been highly controversial, but this controversy surrounds how the amount of tax due is calculated, and the duty to remit taxes, not the form of tax records.[35]

B. EU VAT Electronic Record Regulations

Harmonization of EU member state laws governing VAT has been a major foundation for the creation of the Internal Market. The basic structure of a VAT may be described in the following terms:

> The key features of the Value-Added Tax are that it is a broad-based tax levied at multiple stages of production, with crucially, taxes on inputs credited against taxes on outputs. That is, while sellers are required to charge the tax on all their sales, they can also claim a credit for taxes that they have been charged on their inputs. The advantage of such a system is that revenue is secured by being collected throughout the process of production—unlike a retail sales tax—but without distorting production decisions, as, in particular, a turnover tax does.[36]

[35] See generally Winn & Wright, *The Law of Electronic Commerce*, supra note 26, § 18.03 (discussing the controversies regarding sales tax in the U. S.).

[36] Liam Ebrill, Michael Keen, Jean-Paul Bodin, and Victoria Summers, *The Modern VAT*, supra note 3, p. 3.

Under a VAT regime, the invoice is more important than other tax records because it is on the basis of suppliers' invoices that tax credit is given. As a result, tax regulations governing the creation and storage of invoices may be very stringent. In this context, e-invoicing may be defined as "the sending or making available of an invoice and its subsequent processing and storage, wholly by electronic means."[37]

European tax authorities have identified several major benefits that might accrue to European businesses from the widespread adoption of e-invoicing, including:

- Improving the competitiveness of European enterprises by increasing their productivity and customer satisfaction;
- Achieving substantial cost savings through reduction of manual work, material and transportation costs;
- Improving the cash flow and reducing the credit losses of European enterprises by increasing the automation in the processing of payments, and the speed with which they are remitted;
- Increasing the productivity of workforces through greater use of electronic practices throughout enterprise activities; and
- Supporting the continued development of the Single Market inEurope.[38]

In December 2001, the EU issued Directive 2001/115/EC of 20 December 2001 ("Invoicing Directive 2001")[39] amending Directive 77/388/EEC with a view to simplifying, modernising and harmonising the conditions laid down for invoicing in respect of VAT.[40] All of EU Member States were required to implement Invoicing Directive 2001 from 1 January 2004.[41] As set out in Article 232 of VAT Directive 2006, "[i]nvoices issued ... may be sent on paper or, subject to acceptance by the recipient, they may be sent or made available by

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[37] *EU Expert Group Report*. supra note 13, p. 14.

[38] *Id.*

[39] Council Directive 2001/115/EC, 2002 O. J. (L15) 24.

[40] *Id.*

[41] Invoicing Directive 2001's Relevant Provisions Have Been Incorporated into Council Directive 2006/112/EC of 28 November 2006 on the Common System of Value Added Tax ("VAT Directive 2006"), 2006 O. J. (L347) 1.

electronic means."[42] VAT Directive 2006 further provides three separate avenues for adopting e-invoicing:

> "Invoices ... may be sent either on paper or, subject to an acceptance by the customer, by electronic means. Invoices sent by electronic means shall be accepted by Member States provided that the authenticity of the origin and integrity of the contents are guaranteed:
>
> • by means of an advanced electronic signature [as defined by the Electronic Signature Directive(1999/93/EC)] ...; or
>
> • by means of electronic data interchange (EDI)...when the agreement relating to the exchange provides for the use of procedures guaranteeing the authenticity of the origin and integrity of the data; however Member States may, subject to conditions which they lay down, require that an additional summary document on paper is necessary.
>
> • Invoices may, however, be sent by other electronic means subject to acceptance by the Member State(s) concerned."[43]

Although the e-invoicing Directive was intended to support the growth of the Single Market in Europe by promoting greater use of new technologies, it appears to have had the opposite effect as a result of the way it was transposed into the national laws of different member states. Some member states required that enterprises use "advanced electronic signatures", the most secure form of electronic signature recognized by the 1999 Electronic Signature Directive, while other countries authorized the use of less complex technologies such as "portable document format" (PDF) documents under the "other means" option. In 2009, the Commission noted that differences in the e-invoicing rules among the member states were hampering widespread use of e-invoicing in Europe.[44]

In 2001, when the Commission updated the VAT Directive to re-

[42] *Id.*, art. 232.

[43] *Id.*, art. 233.

[44] Communication from the Commission to the Council: The Technological Developments in the Field of E-invoicing and Measures Aimed at Further Simplifying, Modernising and Harmonizing the VAT Invoicing Rules, COM(2009) 20 Final, Brussels, Jan. 28, 2009, ¶ 1.

quire member states to authorize the use of e-invoices, less than 1% of European enterprises had adopted e-invoicing.[45] By 2009, the highest adoption rates were in business-to-business markets in Scandinavian countries, where national tax regulations adopted the "other methods" option provided for in the e-invoicing Directive, resulting in adoption rates as high as 65%—85% in some industries. By contrast, in other countries adoption rates have been estimated at as low as 3%, representing negligible progress over the last decade.[46] Countries that adopted the most stringent technical requirements, including Italy, Germany and Spain, have had the lowest adoption rates for e-invoicing.[47] A recent study undertaken for the commission identified the primary barriers to e-invoice adoption as lack of standardization of technology and low levels of demand for e-invoicing among customers and suppliers, together with uncertainty and high compliance costs created by the different requirements established in different member states for e-invoicing.[48]

To address these problems, in 2008, the Commission established an Expert Group on e-invoicing with a mandate to design an European framework for e-invoicing which should include legal and best practice guidelines, commercial and operational rules for e-invoicing systems, and technical standards.[49] The Expert Group proposed creating a European Electronic Invoicing Framework that takes note of business requirements for all market segments, legal and regulatory proposals, guidance recommendations for interoperability, content standards recommendations and the creation of new coordinating institutions to ensure implementation of the framework. In 2009, the Commission recommended revising the VAT Directive in order to achieve complete technology neutrality among different options, including both paper and electronic

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[45] Anita Hawser, Paperless Payments Take Off, *Global Finance*, September 2009, at www.gfmag.com/archives/104-september-2009/2371-tcm-guide-e-invoicing.html.

[46] *Id.*

[47] *Id.*

[48] PriceWaterhouseCoopers, Final Report to the Commission: A Study on the Invoicing Directive (2001/115/EC) now incorporated into the VAT Directive (2006/112/EC), January 2009, pp. 5, 41, at http://www.pwc.com/en_BE/be/publications/ec-study-pwc-09.pdf.

[49] What is European Commission doing about E-invoicing? at http://ec.europa.eu/enterprise/sectors/ict/e-invoicing/benefits/index_en.htm.

forms, by abolishing requirements that EDI or electronic signatures be used for e-invoices.[50] This recommendation was endorsed by the Expert Group in its Final Report issued later in 2009.[51]

The 2009 PWC study undertaken for the Commission noted that although national tax authorities in Europe believed that they needed to be able to exercise control over methods adopted by tax payers to guarantee the authenticity of origin and integrity of contents of e-invoices, no such requirements had ever existed for paper invoices.[52] The attempt to provide a legislative framework for such an exercise of control had proved to be more difficult to implement than expected, and in any event, the ability to audit the technology used by taxpayers to determine whether it complies with such requirements is generally beyond the competence of tax authorities. The study's authors suggested that national tax authorities would be better served by focusing on verifying the correctness of VAT treatment of transactions by examining audit trails of invoices and payments, and the manner in which VAT obligations are calculated rather than by focusing on developing new skills to audit authenticity and control functions of computer systems.

The EU approach was initially much more prescriptive than the U. S. approach, which provides only general guidelines and allows taxpayers considerable freedom to determine the requirements of their own business information systems. A consensus appears to be emerging at the EU level that the attempt to provide a more precise regulatory framework for e-invoicing was premature at best. The attempt to avoid technological specificity by providing a menu of options from which national

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〔50〕 Communication from the Commission to the Council: The Technological Developments in the Field of e-invoicing and Measures Aimed at Further Simplifying, Modernising and Harmonizing the VAT Invoicing Rules, COM (2009) 20 Final, Brussels, Jan. 28, 2009, ¶3.1. This recommendation was based on the findings of the PWC study undertaken for the Commission. PriceWaterhouseCoopers, Final Report to the Commission: A Study on the Invoicing Directive (2001/115/EC) now incorporated into the VAT Directive (2006/112/EC), January 2009, pp. 14—15.

〔51〕 Final Report of the Expert Group on e-invoicing (November 2009), *supra* note 13, p. 29.

〔52〕 PriceWaterhouseCoopers, Final Report to the Commission: A Study on the Invoicing Directive (2001/115/EC) now incorporated into the VAT Directive (2006/112/EC), *supra* note 48, p. 15.

regulators could choose had the unintended effect of fragmenting the internal market and creating barriers to the adoption of e-invoicing rather than legal incentives for its adoption. In June 2010, the Commission formally issued a proposal to revise the e-Invoicing Directive to make it technology neutral.[53] Thus, the evolution of EU tax policy regarding the use of electronic invoices for VAT purposes appears to be evolving in the same direction as U. S. tax policy regarding electronic record keeping requirements.

A novel strategy included in the EU e-invoicing Expert Group Report was the recommendation that all actors within both the private and public sector adopt a common invoice content standard and data model—the UN/CEFACT Cross-Industry Invoice (CII) version 2.[54] A consensus was built around support for version 2 of the UN/CEFACT standard because at the time, it was the only international standard that could meet the requirements of different industries and sectors; it can be used to help integrate manufacturing and distribution processes with financial and accounting processes, and UN/CEFACT standards are recognized and accepted globally.[55] The Expert Group noted that the use of network-oriented approaches and open standards, including the CII standard, in implementing e-invoicing would increase the value of e-invoicing adoption to trading parties.[56] In 2010, work was currently underway to develop standards within the ISO 20022 framework to support

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[53] Proposal for a Council Directive Amending Directive 2006/112/EC on the Common System of Value Added Tax, with Regard to the Duration of the Obligation to Respect a Minimum Standard Rate, COM(2010) 331 Final, Brussels, June 24, 2010, at http://ec.europa.eu/taxation_customs/resources/documents/taxation/vat/how_vat_works/rates/com(2010)331_en.pdf.

[54] *EU Expert Group Report*, supra note 13, p. 9. The United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) is a United Nations body that supports the development of ICT standards used in cross-border trade. See generally http://www.unece.org/cefact/.

[55] *Id.*

[56] *Id.*, p. 20.

the adoption of the CII standard.[57]

Ⅲ. THE GOLDEN TAX PROJECT

A. PRC Adoption of VAT

China has adopted VAT in small steps taken over many years.[58] Before market reforms began in 1979, the PRC government depended largely on remittances from state owned enterprises rather than on taxes to finance its operations. The first-phase fiscal and tax reform required for the transition from a centrally-planned economy to a market economy took place from 1980—1993.[59] During this early phase of reforms, the policy of "substituting tax payment for profit delivery" (利改税) was adopted, and taxes were collected by local governments and remitted to the central government. In 1979, China began experimenting with a VAT that applied to only two industries (machinery and agricultural tools) and three products (bicycles, sewing machines, and electric fans) in two cities (Shanghai and Xi'an).[60] In 1984, China expanded the experimentation to include 24 categories of goods.[61] Unfortunately, the overall effect of the migration away from a planned economy towards a modern tax system was the rapid erosion of revenues collected

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[57] JosteinFromyr, The UN/CEFACT Cross Industry Invoice, April 28, 2010, at http://ec. europa. eu/enterprise/sectors/ict/files/35_fromyr_en. pdf. "ISO 20022 is an International Standard from ISO. It constitutes the financial industries common platform for the development of messages in a standardised XML syntax, using a modeling methodology (based on UML) to capture in a syntax-independent way financial business areas, business transactions and associated message flows." EU Expert Group Report, supra note 13, p. 106. Integrating the CII standard with the ISO 20022 framework would make it easier to develop e-invoicing applications that integrate into existing business information systems and provide new services to business information system end users.

[58] 安体富(An Tifu),《增值税转型改革在全国推行的几点思考》(A Few Thoughts about Implementing the VAT System Transformation Nation-wide,《财政监督》,No. 10, 2008, pp. 3—5.

[59] Jinglian Wu, *Understanding and Interpreting Chinese Economic Reform*, Thomson, 2005, pp. 257—268.

[60] Richard M. Bird & Pierre-Pascal Gendron, *The VAT in Developing and Transitional Countries*, Cambridge University Press, 2007, p. 164.

[61] Tax Policy Department, Ministry of Finance, Briefing of VAT Under China's Tax System, March 13, 2007, at http://www. china. org. cn/english/LivinginChina/202770. htm.

by the central government.[62]

In 1994, the PRC responded with a major overhaul of its tax system in order to restore central government revenues. Tax authorities at local levels (provincial, municipal and county) have generally been split into state tax bureaus and local tax bureaus, the former taking charge of administering VAT, consumption tax and certain enterprises' corporate income tax, while the latter have been in charge of administering the Business Tax, Stamp Duty, individual income tax, and other enterprises' corporate income tax as well as other local taxes. In addition, complex turnover taxes were largely replaced with a VAT.[63] The VAT system adopted at this time was not a destination-based consumption tax similar to the VAT systems used in Europe and other developed countries, but an origin-based production tax. Taxpayers were not allowed to claim a tax credit for capital expenditures, and many service industries were excluded because they were subject to a separate business tax collected by local governments.[64]

After China's accession to the WTO in 2001, PRC tax authorities began experimenting with a consumption-type VAT in eight industries (equipment manufacturing, petrochemicals, metallurgy, automobiles, shipbuilding, new and high-tech industries, and agricultural products processing) in three provinces: Liaoning, Heilongjiang, and Jilin.[65] The pilot was extended to Henan, Hunan, Hubei, Shanxi, Anhui, and Jiangxi provinces in 2007, and to five areas in Mongolia and the quake-devastated region of Wenchuan in Sichuan in 2008. In 2009, consumption-based VAT was finally rolled out for the country as a whole.[66]

In order to eliminate the double taxation issue and to encourage the development of modern service industry, China has been implementing

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[62] Christine P. W. Wong & Richard M. Bird, China's Fiscal System: A Work in Progress, in Loren Brandt & Thomas G. Rawski (eds.), *China's Great Economic Transformation*, Cambridge University Press, 2008, p. 431.

[63] Wong & Bird, *China's Fiscal System: A Work in Progress*, *supra* note 62, pp. 433, 436. "Provisional Regulation of the PRC on Value-Added Tax" was issued on December 13, 1993.

[64] Id., p. 440.

[65] Dezan Shira & Associates, VAT Issues (undated), at http://www.dezshira.com/cn/vat-issues.html.

[66] Id.

the "Business Tax to Value-Added Tax Transformation Pilot Program" (the "VAT Pilot Program") in certain selected areas since January 2012. Under the VAT Pilot Program, transportation and certain modern services (i. e. R&D services, IT services, cultural and creative services, logistics services, movable property leasing and certifying and consulting services), which were previously subject to Business Tax[67], are now subject to VAT in selected areas.[68] Shanghai has been selected as the first pilot city and implemented the VAT Pilot Program from January 1, 2012.[69] From September 1 to December 1, 2012, the VAT Pilot Program has also been gradually rolled out in Beijing and other seven Provinces.[70]

It is expected that the scope of VAT will be further expanded until it covers all types of services such as telecommunication, construction, finance, transfers of intangible assets, and real estate transactions, which in 2012 are still subjects to Business Tax. The PRC government plans to eliminate the old VAT and Business Tax systems and replaces

[67] Business tax is a type of turnover tax levied on the provision of certain services (e. g., transportation, construction, finance, telecommunication, entertainment, and other services, etc.) and the transfer of intangible assets and sales of real estate properties. The Business Tax rates applicable to services range from 3% to 20% depending on the specific type of services provided. Transfer of intangible assets and sale of real estate properties are subject to 5% Business Tax.

[68] "The Business Tax to Value-Added Tax Transformation Pilot Program" (Cai Shui (2011) No. 110) jointly issued by the Ministry of Finance and the State Administration of Taxation on November 16, 2011.

[69] "Notice of Implementing the Business Tax to Value-Added Tax Transformation Pilot Program in Transportation and Certain Modern Service Industries in Shanghai" (Cai Shui (2011) No. 111) jointly issued by the Ministry of Finance and the State Administration of Taxation on November 16, 2011.

[70] "Notice of Implementing the Business Tax to Value-Added Tax Transformation Pilot Program in Transportation and Certain Modern Service Industries in Beijing and Other Seven Provinces" (Cai Shui (2012) No. 71) jointly issued by the Ministry of Finance and the State Administration of Taxation on July 31, 2012. According to the Notice, Beijing has implemented the VAT Pilot Program from September 1, 2012. Jiangsu Province and Anhui Province have implemented the VAT Pilot Program from October 1, 2012. Fujian Province and Guangdong Province have implemented the VAT Pilot Program from November 1, 2012. Tianjin, Zhejiang Province and Hubei Province have implemented the VAT Pilot Program from December 1, 2012.

them with the new VAT system by 2013.[71] The current VAT and Business Tax system is the most important source of revenue for the PRC government, providing it with 60% of its annual revenue.[72]

Under the current system, VAT taxpayers in China are divided into two groups based on annual sales volume: Ordinary VAT Taxpayers, and Small-scale VAT Taxpayers.[73] Small-scale VAT Taxpayers are individuals and enterprises whose taxable revenues for the production of goods and services, or wholesale and retail sales, are below RMB 500,000 or other types of enterprise having revenues below RMB 800,000.[74] Ordinary taxpayers are enterprises whose revenue is above those levels.[75] In order to qualify as an Ordinary VAT Taxpayer, an enterprise must apply to the competent tax authority for examination and approval.[76]

There are two types of VAT invoices in China: the VAT General Invoice and the VAT Special Invoice. VAT General Invoices cannot be used to calculate input VAT credit. In general, small VAT taxpayers are only allowed to issue VAT General Invoices and are prohibited from issuing VAT Special Invoices by themselves. As defined in the Guidelines for the Usage of VAT Special Invoices, VAT Special Invoices show the purchase price and VAT amount payable separately so that the purchaser can use the invoice to claim input VAT credit against output VAT payable. The creation of VAT Special Invoice is subject to very specific

[71] KPMG, Driving Indirect Tax Performance: Managing the Global Reform Challenge, (2010) p. 17, at www.kpmg.co.uk/pubs/Driving_Indirect_Tax.pdf.

[72] Id.

[73] Chaowu Jin, *The Regulatory Environment of Chinese Taxation*, Hein & Co., 2009, p. 108.

[74] Detailed Rules for the Implementation of the Interim Regulations on Value-Added Taxes (P. R. C.), (2008), art. 28(1). On January 1, 2009, the thresholds were lowered from RMB 1 million and RMB 1.8 million respectively. Dezan Shira & Associates, *VAT Issues*, *supra* note 65. Under the VAT Pilot Program, the threshold of Ordinary VAT Taxpayer for service providers is annual service revenues of RMB5,000,000 ("Notice of Implementing the Business Tax to Value-Added Tax Transformation Pilot Program" (P. R. C.) (2011).

[75] Detailed Rules for the Implementation of the Interim Regulations on Value-Added Taxes (P. R. C.) (2008), art. 28(2).

[76] Interim Regulation on Value-Added Taxes (P. R. C.) (2008), art. 21. The application includes business license, articles of incorporation, certification of bank accounts and other documentation as may be required by tax authorities. Chaowu Jin, *The Regulatory Environment of Chinese Taxation*, *supra* note 73.

technological requirements regarding how the data should be formatted and printed, which are intended to reduce fraud and are discussed in more detail, *infra* Part III. C. 1. Small-scale VAT Taxpayers issue VAT General Invoices.[77] Even Ordinary VAT Taxpayers are not allowed to issue VAT Special Invoices in consumer transactions or in transactions that are exempt from VAT, but must issue VAT General Invoices for those transactions instead.[78]

Several different rates are used to calculate VAT. Ordinary VAT Taxpayers are generally subject to VAT at 17%, although some products are taxed at 13%.[79] Ordinary VAT Taxpayers are allowed to use VAT Special Invoices to calculate the amount of Input VAT paid and offset that against their Output VAT payable in the same manner that taxpayers under European VAT systems use VAT invoices.[80] By contrast, Small-scale VAT Taxpayers are subject to VAT at the rate of 3% but this is applied to their total sales revenue and no offsets for Input VAT are allowed.[81]

With regard to VAT tax fraud, the VAT Special Invoices are of particular concern to tax authorities, while VAT General Invoices are of less concern. Because of the special role of VAT Special Invoices in administering the input VAT credit system, GTP has been designed to strengthen controls over the issuance and use of VAT Special Invoices.

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[77] However, they can apply to the appropriate State Tax Bureau to have a VAT Special Invoice issued on their behalf. Interim Regulation on Value-Added Taxes (P. R. C.) (2008) art. 21(3).

[78] Detailed Rules for the Implementation of the Interim Regulations on Value-Added Taxes (P. R. C.) (2008), art. 21.

[79] Interim Regulation on Value-Added Taxes (P. R. C.) (2008), art. 2(1). Under the VAT Pilot Program, the applicable VAT rates for transportation and certain modern services (excluding movable property leasing) are 11% and 6%, respectively. Leasing of movable property should be subject 17% VAT. ("The Business Tax to Value-Added Tax Transformation Pilot Program" Cai Shui (2011) No. 110).

[80] *Supra* note 3.

[81] Interim Regulation on Value-Added Taxes (P. R. C.) (2008), art. 12. In 2009, this rate was lowered from 4%—6%. Dezan Shira & Associates, *VAT Issues*, *supra* note 65.

B. VAT Compliance Challenges in Developing Countries

While some of the challenges facing China's tax system are unique[82], many are not. Even though a VAT may be more efficient than many forms of tax, and thus easier to implement for developing countries with limited resources for tax administration, nevertheless it is difficult for most developing countries to administer VAT systems effectively.[83] Tax experts suggest that a successful VAT system requires: simple tax laws; services to assist taxpayers in meeting their obligations under a self-assessed system; simple registration, filing, payment and refund procedures; prompt and effective enforcement and collection of taxes due; sufficient resources to expose taxpayers to a reasonable risk of being audited; meaningful penalties strictly applied for non-compliance, including criminal penalties; and access to independent review of tax authority decisions.[84] Few developing countries have the resources to meet many of these conditions.[85]

The effective administration of any tax system requires several separate but related processes to function properly. A self-assessment tax system such as VAT requires a registration system that is not too burdensome, yet is rigorous enough to block the registration of "shell" entities that can be used to generate fraudulent tax credits.[86] VAT taxpayers must file returns regularly, normally monthly, so the process of filing returns should not be too complex and burdensome.[87] Audit is the core of any self-assessed tax system, but the development of effective auditing procedures is particularly challenging for most develo-

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〔82〕 For example, China is relatively unusual in the international context in the degree to which it places the burdens of tax collection on local government, but does not allow local government to retain sufficient funds to perform the services they are required by the central government to deliver. Christine P. W. Wong & Richard M. Bird, *China's Fiscal System: A Work in Progress*, *supra* note 62, p. 460.

〔83〕 Richard M. Bird & Pierre-Pascal Gendron, *The VAT in Developing and Transitional Countries*, *supro* note 60, p. 2; Christine P. W. Wong & Richard M. Bird, *China's Fiscal System: A Work in Progress*, *supra* note 63, p. 459.

〔84〕 Liam Ebrill, Michael Keen, Jean-Paul Bodin, and Victoria Summers, *The Modern VAT*, supra note 3, p. 141.

〔85〕 Richard M. Bird and Pierre-Pascal Gendron, *The VAT in Developing and Transitional Countries*, *supra* note 60, p. 162.

〔86〕 Id., p. 166.

〔87〕 Id., p. 167.

ping countries.[88] When conducted properly, auditing can be a mechanism for discovering economic activity that would otherwise be hidden in the large informal sector of most developing country economies. Taxpayers who fail to submit returns, or are delinquent with payments, should be subject to effective enforcement actions.[89] Given the difficulty of requiring many taxpayers in developing countries to file and pay VAT on a regular basis, a system for estimating assessments is essential.[90]

Bird and Gendron note:

> One obvious but unduly neglected issue in most countries, for example, is that good administration of any tax requires serious analytical foundations based on sound information and intelligent analysis. One must understand a problem in order to solve it. Virtually without exception, major change and improvement in both tax policy and administration in any country require a solid analytical foundation in the form of a more systematic approach to assembling and analyzing data."[91]

China's GTP provides a mechanism for collecting and analyzing data about enterprise revenues which will be used to improve the administration of China's VAT system. Bird and Gendron also note that "[a] key tool in enforcing VAT compliance is to cross-check purchases for one taxpayer against sales recorded by others. Few countries, however, seem to use such programs systematically to detect underreporting, let alone outright fraud."[92] Another key element of China's GTP is the cross-checking information in VAT returns with data submitted by vendors.

C. Golden Tax Project

In the 1990s, the PRC government launched several "golden projects" to promote the development of its information infrastructure and to modernize the delivery of government services in its Seventh and

[88] Id., p. 169.
[89] Id., p. 172.
[90] Id., p. 174.
[91] Id., p. 181.
[92] Id., p. 170.

Eighth Five-Year Plans (1986—1990 and 1991—1996, respectively).[93] These included the Golden Bridge Project, focused on developing commercial internet service; the Golden Card Project, focused on developing a national credit card network; the Golden Customs Project, focused on linking customs services with an EDI network, and the Golden Tax Project, focused on using information technology to increase compliance with tax laws.[94]

In March 1994, the National Computer Inspection Network System of VAT Special Invoices, or GTP Phase I, was launched in 50 major cities in China.[95] In 1998, work on GTP Phase II began and in January 2001, enhancements to the VAT Special Invoice inspection network went live in Beijing, Shanghai, Tianjin, Chongqing, and five provinces.[96] By July 2001, Phase II of GTP was implemented nation-wide, covering 31 provinces and autonomous regions, 400 municipal cities and 3,835 counties.[97] As of 1 July 2003, all of the General VAT Taxpayers in China have been covered by Phase II of GTP, which represented the completion of Phase II of GTP.[98]

One Network, Four Subsystems

Phase II of GTP has been described by Chinese tax authorities as

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〔93〕 Jeff X. Zhang& Yan Wang, *The Emerging Market of China's Computer Industry*, Greenwood Publishing, 1995, p. 84.

〔94〕 Golden Projects, June 27, 1997, at http://news. cnet. com/2009-1033-200931. html. One of the Golden Projects is the Golden Shield (金盾) project focused on Internet surveillance, and often referred to as the "Great Firewall of China" outside of China. See http://en. wikipedia. org/wiki/Great_Firewall_of_China.

〔95〕 阮诗雄(Ruan Shixiong)&庄建顺(Zhuang Jianshun),《金税工程的回顾与展望》(Looking Back and Forward to the Golden Taxation Project),《福建税务》,No. 4,2003.

〔96〕 *Id.*

〔97〕 *Id.*

〔98〕 许善达(时任国家税务总局副局长,Xu Shanda, Vice Commissioner of State Administration of Taxation),《税务信息化任重而道远》(Taxation Information Construction Still Has a Long Way to Go), August 8, 2009, at http://www. chinatax. gov. cn/n480462/n7921376/n7921561/n7921687/8792375. html.

"one network, four subsystems"[99]. One network refers to the main computer network connecting the SAT with the tax authorities at the provincial, municipal and county level. The four subsystems perform the following functions: issuing VAT Special Invoices; certifying VAT Special Invoices; cross-checking and inspecting VAT Special Invoices; and coordinating investigations.

a. Issuing VAT Special Invoices

When taxpayers issue a VAT Special Invoice, an 84-digit numerical cipher is generated based on the data in the invoice. That, plus the invoice number, taxable amount, VAT payable amount, issue date, and the industry classification code number are printed on the invoice. The cipher is later used to certify the invoice's authenticity. VAT Special Invoices are issued via special "blackbox" computer systems and information about VAT Special Invoices must be stored in this computer system as the invoices are issued. Once a month, General VAT Taxpayers are required to upload the data in their blackbox systems to local tax authorities when filing their monthly VAT returns. This data is stored by the tax authorities in the cross-checking and inspection subsystem.

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[99] Four sub-systems include: a) Anti-fake tax controlled VAT Special Invoice issuing sub-system (Invoice Issuing Sub-system). By deploying the digital encryption technology, the Invoice Issuing Sub-system purposes to strengthen the VAT Special Invoices' anti-fake function so as to guarantee the VAT Special Invoices' authenticity. Super-scale IC and large storage capacity technologies have also been adopted to store the relevant information concerning VAT Special Invoices issued so as to supervise taxpayers' sales revenue. b) Anti-fake tax controlled VAT Special Invoice certifying sub-system (Invoice Certifying Sub-system). By deploying the decryption technology, the Invoice Certifying Sub-system is used to certify the input VAT Special Invoices' authenticity. Only those input VAT Special Invoices that have been certified as authentic can be claimed as a credit against output VAT. c) VAT Special Invoice cross-checking and inspecting sub-system (Invoice Inspecting Sub-system). The Invoice Inspecting Sub-system is used to further verify the input VAT Special Invoices' authenticity by cross-checking them with the corresponding output VAT Special Invoices. By the end of 2006, almost all of the cross-checking and inspecting of VAT Special Invoices have been concentrated at two levels only, i. e. State level and provincial level so as to expedite the process. d) VAT Special Invoice coordinated-investigating information administration sub-system (Invoice Investigating Sub-system). The Invoice Investigating Sub-system is used to investigate those suspected VAT Special Invoices including fake and invalid VAT Special Invoices which have been identified by the Invoice Certifying Sub-system or the Invoice Inspecting Sub-system. The SAT has been organizing, supervising and managing the nation-wide VAT Special Invoice coordinated-investigating activities via this sub-system.

b. Certifying VAT Special Invoices

In order to claim Input VAT Credit, General VAT Taxpayers must apply to have the authenticity certified for the VAT Special Invoices they have paid. PRC tax law is silent with regard to the form of VAT Special Invoices, so the lack of an authorization to submit electronic VAT Special Invoices for Input VAT Credit is understood to mean that the taxpayer must be in possession of the original paper invoice in order to qualify for the credit.[100] In the past, taxpayers had to bring the original paper invoices it wanted to use to claim Input VAT Credit to the local tax office where they were scanned by the tax office staff and stored in electronic form, but nowadays most taxpayers have received authorization to scan their paper invoices and transmit the electronic files to the certifying subsystem. The electronic copies of the invoices are stored in the certifying subsystem. As part of the certifying process, the information contained in the 84-digit cipher is decrypted to test the accuracy of its contents. If the decrypted data and the unencrypted data in the invoice match, then it is certified as accurate and the taxpayer that submitted it can use it to claim Input VAT Credit. With the implementation of online certification of VAT Special Invoices, the efficiency of GTP has to a certain extent been improved.

c. Cross-checking and inspecting VAT Special Invoices

Tax authorities use the cross-checking and inspecting subsystem to compare the information in copies of VAT Special Invoices submitted by issuers with copies submitted by taxpayers seeking Input VAT Credit. If the data in both copies of the invoices agree, then no further action is taken; if not, then the Input VAT Credit copy of the invoice is forwarded to the Investigation subsystem for further investigation. Cross-checking and investigation is conducted at the central government and provincial level rather than at the local level in order to expedite the process.[101]

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〔100〕 Trustweaver, Electronic Invoicing In and With China—Briefing Note, March 31, 2009, at http://www.streamserve.com/upload/China_summary.pdf.

〔101〕 艾迪炫（Ai Dixuan），《金税工程（三期）的基点》（Starting Point of Golden Tax Project（Phase III）），《中国税务》，No. 8, 2006, pp. 10—12.

d. Coordinating investigations

If a VAT Special Invoice is identified as fraudulent or otherwise invalid, it is sent to the subsystem for the coordination of investigations run by the central government State Administration of Taxation (SAT). The SAT manages a nation-wide system of investigating VAT Special Invoice fraud.

D. Unresolved Issues

Implementation of GTP Phase II has successfully reduced the volume of phony VAT Special Invoices: the percentage of VAT Special Invoices that were certified and suspected of non-compliance was reduced from 0.227% in January 2001 to 0.0002% in April 2007; the percentage of VAT Special Invoices that were inspected and suspected of non-compliance was reduced from 8.5% in early 2001 to 0.031% in April 2007.[102] At the same time, tax revenue collected from VAT has significantly increased with an average annual growth rate of 18.43%, as contrasted with an average annual growth rate of 11.8% in the past three years before implementing the GTP.[103] The levying rate of VAT has also increased from 52.6% in 2000 to 83.83% in 2007.[104]

Although GTP Phase II has enjoyed major successes, it has also suffered from some serious shortcomings that PRC tax authorities hope to remedy with GTP Phase III. One loophole created in Phase II is that certification is only of the content of the invoice itself, and authorities do not check to see whether a VAT return was submitted or VAT paid by the issuer. This is because there is a one-month time lag between issuing the invoice and uploading it to the tax authorities, and submitting the VAT return for the relevant time period. In addition, the cross-checking and inspection functions are not performed in real time, but may take several weeks to complete.[105] As a result of these time lags, some

[102] 许善达等(Xu Shanda *et al.*),《金税工程增值税征管信息系统》(Golden Tax Project VAT Collecting and Administering Information System),《中国科技奖励》,No. 10,2008. 另参见许善达(Xu Shanda),《中国税收信息化回顾与展望》(Looking Backward and Forward to China's Taxation Information Process),《电子政务》, No. 10,2009.

[103] *Id.*

[104] 许善达(Xu Shanda),《中国税收信息化回顾与展望》(Looking Backward and Forward to China's Taxation Information Process),《电子政务》, No. 10, 2009.

[105] 禹奎(Yu Kui),《对金税工程存在问题的思考》(Reflections on the Problems of the Golden Tax Project),《涉外税务》, No. 3, 2003.

companies issued huge quantities of fraudulent VAT Special Invoices before shutting down. Such VAT Special Invoices can be certified as authentic by the GTP system, and used by other taxpayers to claim Input VAT Credit even though they are fraudulent. By the time the fraud is detected, tax authorities have suffered significant revenue loss, and tax inspectors have trouble apprehending the issuers.[106]

Because GTP Phase II requires the use of paper invoices, certain administrative processes are very time consuming, labor intensive and costly. In 2003, the tax authorities had to certify around 300 million paper VAT Special Invoices[107], and the volume of paper invoices has increased since then. Tax authorities also bear the administrative cost of printing, selling and cancelling paper invoices. In 2006, PRC government research found that more than 40% of the costs incurred by Chinese taxpayers in relation to meeting their tax obligations could be attributed to handling VAT Special Invoices, and a significant amount of that cost is attributable to handling paper invoices.[108]

Under GTP Phase II, the format of data collected from VAT Special Invoices is not well suited to tax authority audit requirements, resulting in unnecessarily high conducting audits. For example, the data contained in scanned copies of paper invoices and stored in the certifying subsystem cannot be searched or aggregated for statistical analysis. In addition, no provision was made in GTP Phase II to require taxpayers to save the information needed to establish an audit trail.

There is also poor integration between the GTP system and China's other two central government tax systems: the Export VAT Refund System, and the China Taxation Administration Information System (CTAIS). The Export VAT Refund System is connected to the Customs authorities' information systems and used to process export VAT

〔106〕 *Id.*

〔107〕 *Id.*

〔108〕 许善达(时任国家税务总局副局长,Xu Shanda, Vice Commissioner of State Administration of Taxation),《金税工程三期建设要实现五个突破》(Construction of Phase III of Golden Taxation Project Needs to Achieve Five Breakthroughs),《中国税务》, No. 8, 2006. (2006 年 7 月 26 日,许善达在全国税务系统信息化建设工作会议上的讲话,speech by Xu Shanda during the meeting of National Taxation System Information Construction on July 26, 2006).

refunds. The CTAIS is used to handle information about all other taxes, such as personal and corporate income taxes. These three systems currently operate independently and cannot share data. For example, the GTP information about the authenticity of VAT Special Invoices cannot be accessed by the Export VAT Refund System.[109] Poor system integration has hindered the effectiveness of PRC tax collection efforts.

The requirement of paper invoices creates barriers to the adoption of modern supply chain management systems by Chinese companies. Many routine business activities can be conducted online in China today, including placing orders, confirming acceptance of orders, and authorizing electronic funds transfers. However, sellers are still required to issue and send paper VAT Special Invoices to their customers, and both sellers and buyers must reconcile paper invoices with other records such as accounts receivable and payable information, inventory records, shipment notices and shipment receipts.

Ⅳ. From GTP to E-Invoicing in China?

The GTP clearly represents a very different approach to the use of advanced information technology to support tax administration than the approaches developed in the U. S. and EU. China and other developing countries that lack a domestic business culture that supports self-assessment of taxes simply do not have the option of allowing their private sectors to take the lead in developing computerized tax record systems. While it is clear that no developed countries that already have made domestic business cultures that support self-assessment would consider mandating an invoice cross-checking system as draconian as China's GTP, it may nevertheless offer a viable model to other developing countries seeking cost-effective strategies to increase compliance.

The U. S. was the first country to regulate the use of computerized tax record systems. U. S. regulations governing the use of electronic records by taxpayers were based on the principles of technology neutrality

[109] 西安市国家税务局课题组(Xi'an State Tax Bureau Information Construction Research Team),《整合金税工程与 CTAIS 系统,构架"电子发票"应用平台》(Integrating the Golden Taxation Project with CTAIS System so as to Create a Platform for Electronic Invoices), July 29, 2009, at http://www. chinatax. gov. cn/n480462/n7921376/n7921576/n7921766/n7921872/8799827. html.

and letting the market determine the appropriate technology for creating and storing electronic tax records. The U. S. has consistently adopted this approach in regulating electronic commerce in many areas of economic activity.[110]

Although the EU approach to the use of computerized tax records appears to differ markedly from the U. S. approach when only those two systems are considered, when both are compared to the PRC system, it quickly becomes apparent that they share many features in common. Although the EU policy of promotinge-invoicing has resulted in regulations in some member states that are considerably more prescriptive than anything ever issued by U. S. tax authorities, the overall focus of EU e-invoicing policy is to increase the efficiency of European businesses by increasing their use of ICT. This goal is quite different to the PRC goal, which is to use ICT to offset the lack of a domestic business culture that supports self-assessment. Furthermore, in recent years, there are signs that a consensus is emerging in the EU that a less prescriptive approach to e-invoicing is needed, both to reduce the cost of adopting e-invoicing technologies by individual enterprise, and to reduce fragmentation of the internal market as a whole.

The GTP is much more prescriptive than anything any tax authorities in Europe might ever have thought of implementing. With any technology-forcing regulation, there is a risk of lock-in to obsolete technologies and distortions in investment in technology. It will not be clear for some time whether the design of the GTP will impose such great obsolescence or distortion costs on Chinese enterprises that would outweigh the increased compliance benefits it seems likely to deliver.

As China's transition to a market economy continues, at some point in the future, PRC tax authorities may be able to turn their attention to the question of whether Chinese enterprises should be allowed to exchange electronic invoices with other taxpayers and to stop using paper invoices. It is possible that the GTP framework might be able to expand

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[110] See generally Jane K. Winn, US and EU Regulatory Competition and Authentication Standards in Electronic Commerce, 5:1 *Journal of IT Standards and Standardization Research* 84—102 (2006); Jane K. Winn, Globalization and Standards: The Logic of Two-Level Games, 5 I/S—*A Journal of Law and Policy for the Information Society* 185—219 (2009).

to accommodate the exchange of e-invoices among taxpayers, although that was clearly not considered in the original design of the system. It is also possible that the PRC tax authorities might be willing in the future to certify privately developed systems for exchanging e-invoices.[111] With the tenth (2001—2005) and eleventh (2006—2010) Five Year Plans, China adopted a strategy of moving from extensive to intensive economic development, and targeted e-commerce as a tool to help execute that strategy. Outside of enterprises with close ties to foreign trading partners, however, actual e-commerce adoption rates in China remain stubbornly low, particularly among the urban and rural SMEs that constitute the vast majority of Chinese enterprises.[112] Emphasis by Chinese authorities on internationally recognized standards such as the UN/CEFACT CII and ISO 20022 could increase the likelihood of global convergence in e-invoicing technology standards, which in turn could benefit individual enterprises around the world by fueling competition in markets for e-invoicing technologies, resulting in lower prices to end users for more effective products. Under such conditions, Chinese enterprises might enjoy the same kind of benefits from adopting e-invoicing as those that EU authorities have identified with regard to European enterprises, including efficiency gains from the more effective use of information technology generally.

Given the limited use of advanced electronic commerce technologies by the majority of Chinese enterprises, however, it is unlikely that promoting private sector adoption of e-invoicing will be a top priority for PRC tax authorities any time soon. In the interim, Chinese companies may have no choice but to support the development of dual paper and electronic systems similar to those used by many European businesses who find it too difficult to abandon paper invoices completely.

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[111] Jane K. Winn & Song Yuping, Can China Promote Electronic Commerce Through Law Reform? Some Preliminary Case Study Evidence, 20 *Columbia Journal of Asian Law* 415 (2007) (discussing the 1989 Interim Regulations Managing Accounting Software which permitted Chinese enterprises to use privately developed accounting software programs that had been certified compliant with government standards.)

[112] See generally, Jane K. Winn & Song Yuping, China's Transition from Extensive to Intensive Development: the Role of Electronic Commerce (forthcoming).

V. Conclusion

The GTP is a remarkable effort to use advanced information technology to improve compliance with VAT in a developing country. The cost of compliance with GTP for General VAT Taxpayers in China may be significant, given that the GTP does not provide for the exchange of electronic invoices between taxpayers which might allow for increased efficiencies to reduce conventional compliance costs. Early analyses of the impact of the GTP suggest that it may play an important role in increasing compliance among Chinese enterprises, although it has not yet been fully implemented.

If the GTP proves to be an effective mechanism for increasing compliance with VAT, tax administrators in other developing countries might find it merits careful study. China is relatively unique among developing countries because it has both globally competitive domestic ICT enterprises and vast segments of its economy which remain very underdeveloped. While China's ability to produce the ICT technology required to execute such a technologically advanced tax administration system as the GTP may be unique, other countries that lack a similar globally competitive domestic ICT sector may still be able to copy selective elements of the GTP using imported technology. Global convergence around UN/CEFACT and ISO standards for e-invoicing would increase the odds that the benefits of widespread adoption of e-invoicing technologies in developing countries would outweigh the costs.