

11-15-1999

# Tax Policy Litmus Tests: Enforceability, Privacy, and Efficiency

Jon M. Peha

*Carnegie Mellon University*, [peha@andrew.cmu.edu](mailto:peha@andrew.cmu.edu)

Follow this and additional works at: <http://repository.cmu.edu/epp>

 Part of the [Engineering Commons](#)

---

This Response or Comment is brought to you for free and open access by the Carnegie Institute of Technology at Research Showcase @ CMU. It has been accepted for inclusion in Department of Engineering and Public Policy by an authorized administrator of Research Showcase @ CMU. For more information, please contact [research-showcase@andrew.cmu.edu](mailto:research-showcase@andrew.cmu.edu).

# Tax Policy Litmus Tests: Enforceability, Privacy, and Efficiency

Jon M. Peha<sup>1</sup>

Professor of electrical engineering & public policy, Carnegie Mellon University,  
and Independent Consultant

## Testimony before the Advisory Commission on Electronic Commerce San Francisco, December 15, 1999

I would like to thank the esteemed members of the Advisory Commission Electronic Commerce, and its Chairman, Governor Gilmore, for inviting me to testify today. My name is Jon Peha. I am a professor of electrical engineering and public policy at Carnegie Mellon University, and an independent consultant, but today I am representing no one but myself. I will begin by commending the Commission for allowing a few neutral parties like me to speak today. While it is important to hear from representatives of the e-commerce vendors, the traditional vendors, and the states, neutral parties have much to offer in this debate, and our voices are not always heard.

Policy-makers should be seeking a practical *non-discriminatory* tax policy. With such a policy, I would pay the same tax rate if I buy software on a floppy disk from my local computer store that I would pay if I download the same software over the Internet from an out-of-state vendor. To make this work, tax rate should depend only on the buyer's location. If taxes on e-commerce were larger, then they would impede growth of this valuable marketplace. If taxes on e-commerce were smaller, or these taxes were not collected, then traditional vendors would face a disadvantage even when they are the least costly option. Worse yet, consumers who cannot afford computers and Internet access would pay higher sales taxes, making this one of the most regressive tax policies on the books. Note that making the tax rate depend on the buyer's location does not tell you where those taxes go. For an interstate sale, there are three options. The taxes could go to the state where the buyer is located. Most proposals before this Commission have assumed this option. Alternatively, the taxes could go to the state where the seller is located, even though the rate depends on the buyer's location. This option has received little attention. Finally, the taxes could go to the federal government. I will not endorse any of these three options today, but mention them for your consideration.

Instead, I will focus on the most essential characteristics of an effective policy. I propose three litmus tests to evaluate any proposed policy. First, the policy should be mandatory and *enforceable*. An unenforceable tax is worse than useless. It puts honest vendors who voluntarily comply at a competitive disadvantage. For a tax to be enforceable, transactions must produce records that cannot be altered or deleted without the possibility of detection from an auditor. Second, the tax policy should not force anyone to compromise the *privacy* of buyer or seller. Already, many consumers are not engaging in electronic commerce due to privacy concerns, and those concerns are likely to grow over time if they are not addressed. Third, collection must be *efficient*, adding minimal cost and delay. A policy meeting these litmus tests does not currently exist. Creating such a policy is particularly difficult for intangible information-based products such as software and digitized music. There has been considerable discussion about the third issue: efficiency. Many proposals recommend tax simplifications that will improve efficiency, and I wholeheartedly support these efforts. However, I will focus on the first two issues, enforceability and privacy, which have not received the attention that they desperately deserve.

The heart of the problem is that electronic records of transactions can be altered with no risk of detection. Paper records are more immune to manipulation, but e-commerce vendors may produce no paper records that corroborate their electronic records. The solution is to involve third parties in the

---

<sup>1</sup> Carnegie Mellon University, Dept. of ECE, 5000 Forbes Ave., Pittsburgh, PA 15213-3890.  
(412) 268-7126, peha@ece.cmu.edu, <http://www.ece.cmu.edu/~peha>

creation of transaction records. This must be done in a manner that meets the three litmus tests. For enforceability, it must be possible for auditors to retrieve all of the needed transaction details from the vendor, the third parties, or a combination thereof. It must also be impossible for the third parties to alter or delete records without risk of detection. For privacy, it must be impossible for the third parties to read these transaction records. For efficiency, there should either be a single auditing agency with jurisdiction, or if there are multiple agencies, they should cooperate and share information, and they should have identical record-keeping standards. Today, credit card companies are the third party in many transactions. This clearly does not meet the privacy litmus test or the enforceability litmus test. Some proposals you will hear today involve creation of new "Trusted Third Parties," including the proposal from the National Governors' Association. This proposal may have merit, but in its current form, it does not adequately address the issues of auditability, privacy, and efficiency. The mere presence of Trusted Third Parties does not make audits of e-commerce vendors unnecessary, as some advocates may hope. I hope that proponents of these proposals will continue to seek adequate solutions.

When establishing these third parties, it is better to use competing commercial firms than government or government contractors wherever possible. Private-sector competition will lead to more innovation, lower costs, and better services. In one effective system, there are two kinds of commercial third parties: electronic notaries and verifiers. Electronic notaries create time-stamped and tamper-proof transaction records, and they do this without examining the contents of the records. Notaries must also be able to retrieve all notarized records submitted by a given vendor when that vendor is being audited. Verifiers provide verified credentials. They provide the credentials needed for a transaction, and nothing more. For example, a verifier might indicate the state where a buyer is located, but not the buyer's identity. Separating these functions protects privacy. To create effective commercial third parties, government should establish a voluntary accreditation program. E-commerce records will be handled only by accredited third parties. Commercial firms can request accreditation. Only the effective ones will get it.

To summarize, a non-discriminatory tax policy is desirable and possible. The Commission should apply three litmus tests to all proposed policies. The policy should be enforceable, which requires trustworthy records. The policy should not compromise the privacy of buyer or seller. And the policy should be efficient. Most current proposals fail these tests. To achieve this, third parties are needed, such as commercial verifiers and electronic notaries. However, merely having trusted third parties is not enough to make audits of e-commerce vendors unnecessary, and some existing proposals for the creation of Trusted Third Parties need work. To create the right kind of third parties, government should establish a system of voluntary accreditation with carefully designed criteria. In addition, it is important to establish one universal set of record-keeping standards for e-commerce transactions.

For more information on an effective approach, see <http://www.ece.cmu.edu/~peha/ecommerce.html>

## Biography of Speaker

Jon M. Peha has been a professor of electrical engineering and public policy at Carnegie Mellon University for eight years. He consults for computer and telecommunications companies and government agencies in the US and abroad. His work spans technical and policy issues of telecommunications and computer networks, including electronic commerce. Dr. Peha has been a member of technical staff at SRI International, AT&T Bell Laboratories, and Microsoft. He has served on legislative staff in both the House and Senate, focusing on telecommunications and electronic commerce. He also served as coordinator for an interagency US Government program to assist developing countries on information infrastructure, in conjunction with the US Agency for International Development, Federal Communications Commission, State Department, and National Telecommunications and Information Administration. Dr. Peha holds a Ph.D. in electrical engineering from Stanford, and a BS from Brown. Home page: <http://www.ece.cmu.edu/~peha>