

Follow the money: how does industry pay programmers' salaries when the required intellectual property is offshored?

Gio Wiederhold

6 December 2009

Abstract: There has been much discussion about offshoring in the computer and data-processing industries. For instance, the issue of job shifts due to globalization in the software industry has been addressed in a 2006 ACM report [ACM:06]. Complementary to those discussions is the offshoring of intellectual property (IP), the capital complement of the labor and capital balance which drives our high-technology industries. The underlying economic model -- involving taxation and reimbursement of workers from the revenues that their products generate -- has not been explicated and is largely unknown in our community. This article presents the issue of software income allocation and the role played by IP when offshoring jobs. We also explain why there is such a lack of insight into the economics of software, from the investments made to the profits being accumulated, and capital then becoming available for investing in new projects.

The intent of this article is to make computer scientists aware that preceding a flow of jobs in computing is actually a flow of IP. Especially the ability to create valuable software greatly depends on prior technological prowess. The processes that allow IP to be moved offshore are formally legal, although the resulting accumulation of massive capital in tax havens is drawing governmental attention and putting pressure to change tax regulations [ACM:06, pp.39, 256]. However, the changes proposed in those discussions ignore the crucial role of IP in generating such capital. In addition to advocating transparency about IP transfer processes, the article presents one radical suggestion, namely eliminating corporate taxation as a way to avoid the distortion that is now driving the outflow of IP and provides much of the motivation for keeping capital and IP offshore.

This article does not address the risk of misappropriation of IP when offshoring, a related but orthogonal issue; it only covers processes that are legal. That risk is addressed throughout the ACM report [ACM:06, pp.11+25]. Tax incentives, a much larger economic factor for businesses than misappropriation of IP, are cited in the report, but the role of taxhavens is ignored [ACM:06, pp.35,41,112,177, 188].

Introduction: Programmers and the computer scientists supporting their work have traditionally focused on producing quality high performance software on time and at an affordable cost [Boehm:81]. They have rarely been concerned with the sales and pricing of software, and only question financial policies when the company that employs them goes broke. There is actually a strong contingent in the profession who feel that software should be a free good [Gay:02]. Implicit in that view is that government, universities, and foundations should

pay for software development, rather than the users. In that model, programmers see themselves as creative artists, creating beauty and benefits for mankind. However, consider the size of the software industry. Its revenue is \$121B per year in the U.S. alone, well over 1% of the US GDP [Compustat:02]. An even larger amount is spent in non-software companies for business-specific software development and maintenance. Over 4.8 million people are employed in this and directly related fields, earning nearly \$333B annually [BLS:07]. It is hence unlikely that universal free software is an achievable and even a desirable goal. Appropriately, open source initiatives actually focus on software that deserves wide public use and should be freely available to students and innovators, such as editors, compilers, and operating systems. Since the focus of this article is on economics, and the economic model of open source software is not well understood, this article is limited to the flow of money related to commercial software; i.e., software written to make a profit, either by selling it or by making enterprises more efficient. Part of the income generated by commercial software is used to pay the programmers' salaries. Other portions go to grow the business, to investors, and to taxes that are due and support the needed infrastructure. Figure 1 sketches the major components.

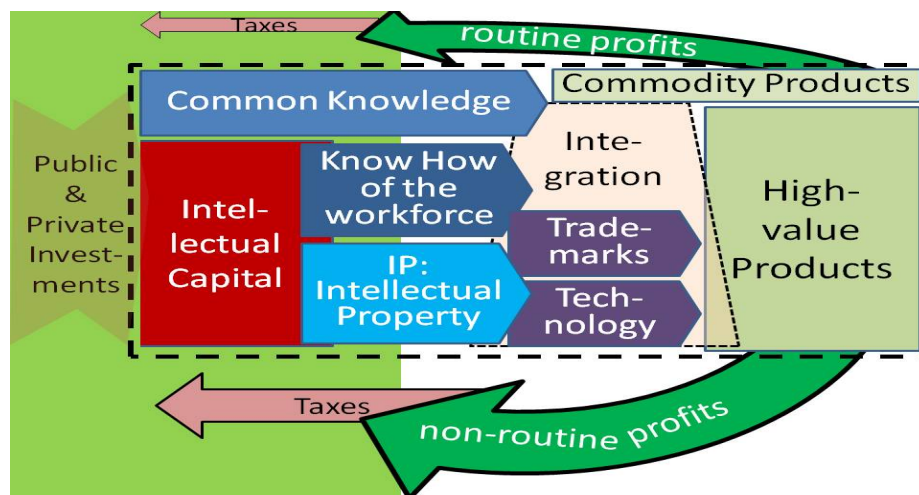


Figure 1. Components of the economic loops for software.

Definitions: Since the revenue aspect of software economics has been ignored in Computer Science curricula, this article introduces some concepts from the literature of business economics and intellectual property generation and exploitation [SmithP:05]. Within the context of software, many general definitions can be simplified. For instance, we can ignore manufacturing costs, since software products are easy to copy. We also ignore the costs of the materials when developing and producing software. For tangible products, say computers, material costs are significant, but for software the cost of its tangible media is negligible. The value of software is hence assignable solely to the intellectual efforts of its designers, implementors, and marketers. Even the contents of a tangible master file or a memory in a cellphone is still an intangible. Everything inside the dashed lines of Figure 1 is intangible, only the money is real.

If the owner of the software protects that ownership, that software is considered intellectual property. To protect its intellectual property an enterprise will disallow purchasers of copies to make further copies that might be sold. The means of protection vary, and include asserting copyrights, registering trademarks, making copying difficult, only releasing binary images of the code, and threatening prosecution. The intellectual property held within the owning enterprise is primarily protected by keeping the source code secret.

Employees and contractors in the software industry are routinely required to sign non-disclosure agreements (NDAs) in order to protect trade secrets. Trade secrets cover the majority of the intellectual property (IP) owned by companies that develop software. Patents can protect visible processes, as one-click-ordering. But patenting of internal processes that contribute to create quality software would require revealing the methods, records, and documents employed. Those are best protected as trade secrets [Damodaran:06]. For companies that market software a complementary component of corporate IP are its trademarks. Trademarks are visible and will be registered and their use defended. The value of trademarks derives from a combination of having excellent products in the market, marketing methods to further spread their use, and investing in advertising to spread the word. For products that benefit from ongoing sales customer lists are also of value; those will also be protected as a trade secret. A motivation for employees to keep trade secrets is the contribution to their collective job security that these constraints provide.

Without protected IP the income of a company would reduce to the routine level provided by commodity products, with margins after production and distribution of say 10%, insufficient to invest in innovation. Protected IP and the knowledge and expertise of staff within a company are the intangibles that together represent the intellectual capital of an enterprise. The employees that know how to exploit its IP complement the IP; the integration is essential for a successful enterprise, one that may have margins greater than 50% before spending on R&D. Having IP without a knowledgeable staff to exploit the IP is equally futile. When a high-tech company is acquired, there is typically a requirement that senior staff remain until its processes are solidly embedded inside the purchaser. Even a startup, without any identifiable IP, will have some specific ideas and concepts in the minds of its founders that form the seed of growth. It will take time and money for that seed to mature into salable products, a delay referred to as the economic gestation time [Wiederhold:08].

Intellectual property and Jobs

All subsequent developers on a software project benefit from the work that has gone on before, that is from the Intellectual Property (IP) that is in place. That IP complements the knowledge due to education and prior experience that new employees bring to the job.

The importance of IP to employee productivity becomes very clear when companies grow to a size that off-shore outsourcing of jobs is being considered. The new workers, be they testers to provide quality assurance, maintenance programmers, sales staff, or call center employees, will

receive material representing IP that exists in the parent company at that time. Offshore researchers will also build on requirements and experience collected by the parent company.

Splitting the intellectual capital

The intellectual capital is the knowhow of the workforce and the intellectual property (IP) it has generated. As a company matures the IP grows and becomes its major asset. Risks from turnover of employees become less critical. To gain financial flexibility, a company can identify and isolate its IP. The rights to identified IP, as trademarks and technology, can be moved to a distinct subcorporation. Separating the IP is an initial phase in setting up an offshored operation whenever significant IP is involved [WTGS:09]. To be productive the extant technology still has to be made available to the creative workers, and that is done by having the productive corporate divisions pay license fees to the subcorporation holding the technology IP. An illustration will clarify the process of splitting rights from the property itself.

A company *USco* may sell its headquarters building to a real-estate enterprise *REco*, with a provision that the *REco* will lease the building back to *USco*. If *USco* has received a fair value for the building, *USco*'s total tangibles remain unchanged until it starts spending the money it received for the sale. *REco* may offer an attractive lease because *REco* is located in a taxhaven. Actually, *REco* can be set up by *USco* and remain under control of *USco*, also its tenant. Nobody moves and few employees will notice a change. There may be a new brass plaque on the building and a sign 'REco' on the door to the rooms housing the people who maintain the building. The public consolidated annual report of *USco* needs only to list the name and location of the controlled subcorporation *REco*, the assets of both are combined. Since the lease receipts and payments cancel out, the more complex financial flow is invisible.

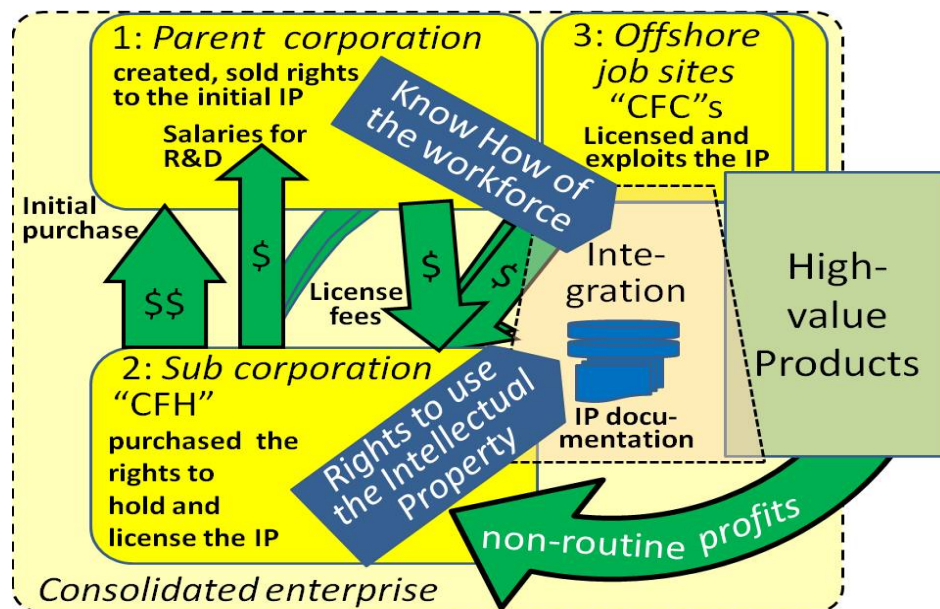


Fig.2 Rights to the IP isolated in a subcorporation

Such transfer-of-rights transactions are yet simpler when applied to intellectual property. The rights to a company's IP, or to an arbitrary fraction of that IP, can be sold to a Controlled Foreign Holding company, a CFH, set up in a taxhaven. Once the rights to the IP are in the CFH the flow of income and expenses changes. The rights to the IP are bundled, so that no specific patents, trade secrets, or documents are identified. The net income that is attributable to the fraction of the IP held in the CFH is collected in an account also held in that taxhaven. One way of collecting such income is to charge royalties or license fees for the use of the intellectual property at the sites where the workers create saleable products, both at home and at offshore sites. There is no risk of IP loss at the CFH, because nothing is actually kept there. To reduce the risk of IP loss where the work is performed, new offshore sites are set up as Controlled Foreign Corporations (CFC's) rather than using contractors [WTGS:09]. Since the IP is crucial to making non-routine profits, the royalties can be substantial, and will greatly reduce the profitability at the parent and at the CFCs from worldwide software product sales.

Now much flexibility is gained by the consolidated enterprise. Work can be shifted wherever it appears to be effective, perhaps where new incentives are being provided, and the needed IP can be made available there, as long as the license fees are paid to the CFH [Rahn:09]. Paying royalties on profits is preferred, since reported profits already represent changing profit margins due to poor sales or to high margins due to cheap labor.

The actual IP contents needed to perform creative work is transferred via a combination of paths: documents, code, and personal interaction by staff interchanges among the remote sites and the originating location. Most transfers are mediated by the Internet, which allows rapid interaction and feedback. The CFH does not get involved at all.

There are hence three types of parties involved in IP creation and use as illustrated in Figure 2: the parent, the CFH, and the CFCs. Employees reside and create IP at the parent and the CFCs. Large multinational corporations will actually establish many dozens of controlled entities, to take advantage of different regulations and incentives for certain activities in various countries.

Valuing the transferred IP.

The CFH subcorporation that obtains the rights to the IP, and will profit from fees for the use of that IP, must initially purchase that IP from the prior owner. But setting a fair price is difficult. If the IP is overvalued the company selling the IP to the CFH will have gained too much income, on which it has to pay taxes. If it is undervalued, excessive profits will accrue to the CFH.

How is the value of the transferred IP documented? The annual reports to shareholders and the 10K reports submitted annually to the SEC rarely provide estimates of the value of a company's intangible property. Only when one company acquires another high-tech company are assessments of the IP obtained made. Three methods to assess the value of the transferred IP are in use: the IP share of the company's total market capitalization [Becker:02], the specific income expected from its products [Wiederhold:06], and the expected margin on R&D

investments as they provide benefits over successive years [GrossmanH:01]. All three methods leave uncertainty. Using more than one method helps in gaining confidence in the resulting valuation of the IP.

While the valuation of all the IP in a company is certainly a challenge, for the purpose of offshoring software IP some simplification of confounding items is possible. Tangible property is relatively small in a high tech company. The value of the workforce can be assessed by comparing acquisitions of similar companies without IP. For work that is offshored the new workers do not contribute prior proprietary knowledge, but only contribute IP subsequently. The benefits of marketing expenses tend to be short-lived. Technological IP will be mixture, some created by efforts in product improvement, that drive revenue with little delay, and results of fundamental R&D that take a long time to get to the market.

Taxhavens

Offshoring is greatly motivated by being able to avoid or reduce taxes on income by moving rights to the intellectual property into low-tax jurisdictions, i.e., into taxhavens. There are two types: semi-taxhavens -- countries that want to attract jobs through active external investments - - and primary taxhavens. Semi-taxhavens tend to provide temporary tax benefits. Countries intent on growth, such as Israel and Ireland, have offered tax holidays to enterprises setting up activities there; India provides incentives for companies that export. Many Eastern European countries have set up or are considering similar initiatives. To set up a subsidiary CFC in a semi-taxhaven requires financial capital and significant corporate IP, so that the workers can become rapidly productive. Those resources may come through a primary taxhaven.

Primary tax havens are countries with small populations that focus on features that attract companies that will not invest in actual activities there. No local personnel will be hired. Services needed for a remote holding company, such as registration with the local government, mail forwarding, and arranging board-of-directors meetings is offered efficiently by branches of global accounting firms. For example, a single 5-story building in the Cayman Islands is the address for 18,000 holding companies, and the entire country, with less than 50,000 inhabitants, hosts over 90,000 registered companies and banks. The income from the \$3000 annual registration fees for that many companies allowed the Cayman Islands not to impose any taxes on anybody. Even the beach resorts, available for meetings, are not taxed.

Definitions of what makes a country a prime tax haven vary, but always include negligible taxation and lack of transparency. A few dozen jurisdictions actively solicit and lobby for business, citing their taxhaven advantages. Often no reporting of income and assets is required. Advantages can be combined. For instance, the rule that Cayman-based corporations must have one local annual meeting can be overcome by having a Cayman company be formally resident in British Crown Colony, as Bermuda. For a CFH fully controlled by another corporation, there would anyhow be only one shareholder. Cayman companies need not to have external directors on their boards and optional board meetings can be held anywhere. Neither audits nor annual

reports are required, but for criminal cases records will be made available. At the extreme end are countries identified by the OECD as uncooperative taxhavens, which even shelter fraud [Makhlouf:02]. The use of primary taxhavens causes a loss to the U.S. of over \$100B annually, a substantial amount compared to the \$370 actually collected by the U.S. treasury as corporate tax [Wilson:09] [Cray:09]. Actually, only \$16B was paid by multinational corporations in the U.S. [PIRG:09]. For developing nations an annual revenue loss due to taxhaven use of about \$125B has been estimated.

Use of assets in a taxhaven

After an IP transfer to a primary taxhaven there are two types of assets in the taxhaven CFH: the more auditable financial assets, derived from licensing and royalties for use of the IP, and the IP itself. Both will grow steadily as sketched in Figures 2 and 3. Those assets are now freely available to initiate and grow projects in any CFC. The IP in the primary taxhaven is made available by charging license fees to those semi-taxhavens, providing immediate income to the CFH. Once the projects have generated products for sale, royalties on those sales provide further income to the CFH.

Initially the income at the CFH will have to be used reimburse the parent company for the assumed value of the IP transferred [LeveyWC:06]. That amount is typically paid over several years. Moving the IP offshore early in the life of a company, when there is little IP, increases the leverage of the approach. The income of the CFH will also be used to pay for the cost of ongoing R&D, i.e., for the programmers at the parent company and in any IP generating offshore location [Weissler:02]. U.S. taxes will have to be paid on such funds repatriated to the U.S., since they represent income. Similarly, if work is performed in other countries they can levy taxes at their rates. The funds not needed to support R&D, often more than half after the initial payback, can remain in the CFH. In each yearly cycle yet more funds will flow to the holding company in the taxhaven. Additional funds may be repatriated from a CFH when a country, as the U.S., offers tax amnesties for capital repatriation or when the parent companies shows losses, so that the corporate income tax due can be offset [Clausing:04], [ACM:06, p.256].

The payments by the CFH for creative work assure that all the resulting IP will belong to the CFH. While the value of the initial IP purchased diminishes over time, the total IP held in the CFH increases as the product is improved and provides a long-term IP and income stream.

Starting an new offshore project

Once money and IP have been accumulated in a primary taxhaven, they should be deployed for generating yet more income, and avoiding showing excess capital on the consolidated books. Money will be needed to pay for workers on new projects, and IP will be needed for making them effective, and bringing the future income to non-routine levels. The segment depicted in Figure 3 may cover 10 years. The value of the IP needed for a new project is based on the expectation of income it will generate, and will be very high for a promising project. The export of IP, just like any property export, should generate income to the provider. Such exported

income, moved via a primary taxhaven, has avoided any payment of taxes. Note that only an appropriate fraction of the rights to the IP are shipped out of the taxhaven. The actual documents will have to come from the originators, wherever they may work, but they will never touch the CFH in the taxhaven, which formal owns the IP.

Since the value of IP is not reported anywhere, nothing is visible to employees or shareholders, except to a few financial experts in the company, or more typical, their financial advisors.

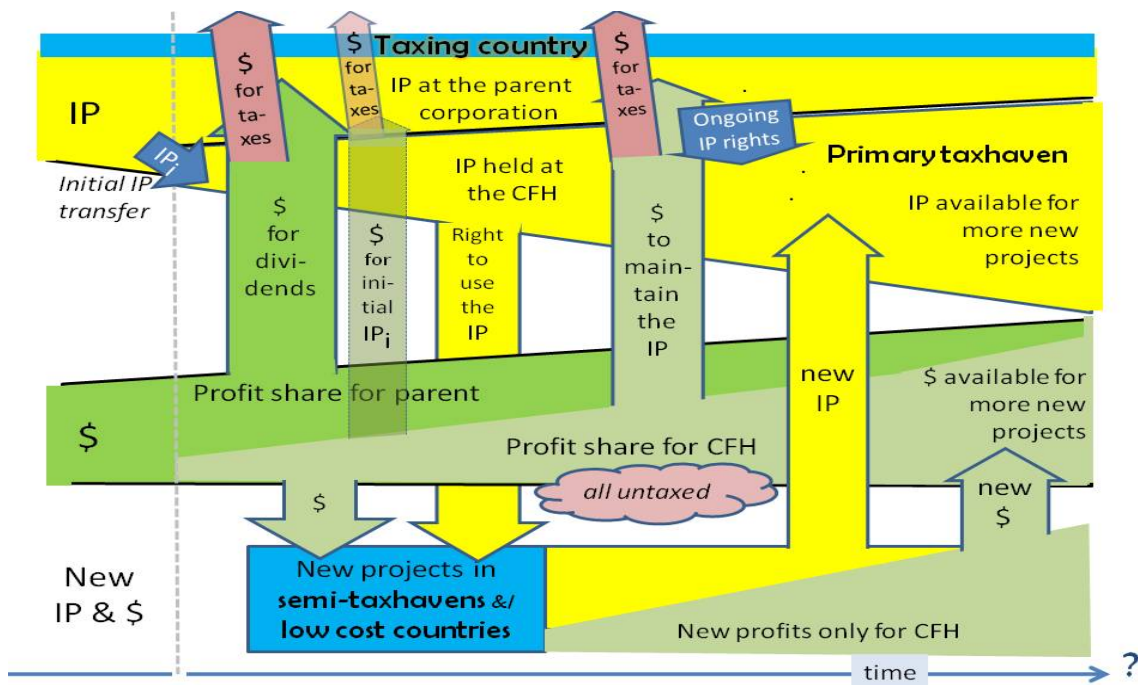


Fig.3 The changing investment scene as taxhaven resources become available

If new projects are initiated fully by the primary taxhaven and not located with the parent, both the IP exports and the resulting non-routine income enabled by IP transfers escape all taxation. And in most jurisdictions no one will check if the IP valuations and related royalties are fair. Funding the same new project at a taxing locale that requires visibility would be costly and awkward. For instance, profit margins would be out-of-line and raise suspicions. Investing in low-cost countries enjoys similar tax benefits, since high license fees paid to a CFH will greatly reduce the taxable profit in those countries.

Over time the share of profits directly available to the parent decreases, and dividends may have to be paid out of CFH funds. Those payments are taxed twice, first as part of corporate taxes and then, at a greatly reduced rate, as shareholder income. Paying few dividends out of CFH funds and starting new projects instead is an attractive alternative.

Effect of having financial and IP assets in a taxhaven

There are several effects that should be of concern to computer professionals, even though those effects are indirect. Three major elements are: instability of work opportunities, imbalance of large versus small companies, and loss of infrastructure support.

Having funds in a primary taxhaven provides to multinational corporations much flexibility to take advantage of global opportunities. Whenever and wherever there are business opportunities and incentives, the funds can be rapidly deployed. Of course, moving work to semi-taxhavens is more advantageous than supporting work in countries that tax at typical rates. When semi-taxhaven countries attract investments in tangibles, say, a car factory, benefits are retained after the tax holiday, but IP investments can be rapidly redeployed. Only a few senior people may have to move physically. When the semi-taxhaven also has a low wage structure, the benefits for the parent corporation multiply.

Countries seeking jobs for growing populations will be pleased about such investments, even if they are structured to minimize local corporate profits and taxes, since royalties due to the CFH for the use of the IP can greatly reduce profits. Governments often create semi-taxhavens to encourage new projects, but may not realize how rapidly corporations can move facilities that depend primarily on IP. Temporary tax incentives then do not provide the long-term benefits these countries expected in return for the tax losses.

The tax avoidance enabled by accumulating IP and funds in any taxhaven reduces the ability of governments of the countries where the actual work is performed to support the infrastructure needed for a healthy economy. That infrastructure includes public roads and transportation, health services, and education for the next generation. Scarcities can be seen in Silicon Valley, Silicon Gulch, and Electronics City, i.e., Bangalore [ACM:06, p.50], but tracing cause and effect is complex.

Smaller companies, that have not had the opportunity to employ taxhavens, are disadvantaged, even though they are seen by most economists as the major drivers of growth. In many countries, including the U.S., funds disbursed for R&D are eligible for government tax credits, providing yet more benefits to mature corporation that are able to offset R&D labor costs against any taxes remaining on their profits. Since most large firms have already established tax havens, tax consulting firms intent on their growth are now marketing the use of taxhavens to medium-sized businesses as well.

Lack of transparency

The creators of the software, even if they do care where their paycheck comes from and where the IP they produce goes, cannot follow the paths [Lev:01]. Many intermediate corporate structures get involved, so that tracing the sources of the programmer's income becomes wellnigh impossible, in the same way that academics do not see on their paycheck stubs what part of their salary comes from DARPA, NSF, ONR, or their university. Even corporate directors, although in the end responsible, will not be aware of specifics, other than having

agreed to a tax reduction scheme operated by their accountants. Investors and shareholders will not find in consolidated annual reports or 10-K filings any direct evidence of taxhaven usage, since regulations devised to reduce paperwork hide amounts held and internal transactions within controlled corporations. Funds transferred for R&D and dividends from taxhavens are first deposited in corporate income accounts, and then taxed, but may still be eligible in many countries for government tax credits for corporate research. The taxpayers in those countries are not aware that benefits beyond salaries, namely income from profitable IP, will not accrue to the country providing those research credits [Rashkin:07].

Tax avoidance processes have been sketched in 'Perfectly Legal', but not applied there to corporate IP transfer [Johnston:03]. Recently their promoters, perhaps to gain more business, have provided some general documentation, and even address the risks of misvaluation of IP and of faulty royalty rates [LeveyWC:06]. The complexity of the arrangements makes it easy to cross the boundaries of legality. Misvaluations can greatly magnify the effect of IP exports and consequent tax losses. The firms that provide the advice for setting up tax shelters have the valuable required broad competencies [ACM:06, p.246]. Their staff often function as directors of their customers' CFH, again invisibly. Most such advising organizations protect themselves from legal liability by splitting themselves formally into distinct companies for each country where they operate. Then those companies rejoin by becoming members of a 'club', set up under Swiss laws (*Vereinsgesetz*). The member companies of such a club do not assume responsibilities for each others work and advice, even if given to the same multi-national corporation. But the club can share resources, information, and income among the member companies, and allow them to function as one unit.

But similar sharing of information is restricted for U.S. government officials. Rules put in place to protect corporate privacy prohibit sharing of information among IRS staff regarding arrangements used by specific taxpayers to avoid taxes. Even a recent US government report had to rely on survey data, and could not use corporate filings [GAO:09]. A thorough study into IP and capital flow would require changes in the restricting regulations.

Incremental suggestions

No matter what conclusions are drawn from this article, any follow-up will require increased transparency. A Senate bill, introduced March 2009 by Senator Levin, "To restrict the use of tax havens ...", includes a number of measures to increase access to corporate data of companies that have set up taxhavens and to the information that their advisers provide. Its primary goal is to tax CFHs as domestic corporations. It is unclear if that bill will become law, since complex arguments can be raised about its effects. The role of IP and jobs is not addressed in the bill, and unless the public is well informed it will be hard for meaningful reforms to gain traction.

Without transparency one cannot assess quantitatively the relationships of IP offshoring and jobs offshoring. While it is clear that there is an initial dependency, long-term effects can only be

hypothesized. That tax schemes create an imbalance between small and large innovators is clear as well.

With more information in hand, scientists and researchers in industry might try to affect corporate policies, if it appears to them that those are worrisome. While employees have few, if any legal rights to determine corporate directions, they may well have expectations about their employer's behavior. A corporation may listen, since the motivation of a their workforce is a valuable asset. Corporate leaders may not have considered the long-term effect of schemes set in place to minimize taxes. However, those leaders are also under pressure to compete, nationally and internationally [ACM:06, p.207]. It has been suggested that international initiatives are needed to level the playing field.

A radical suggestion to change the flow

A radical solution to problems created by tax avoidance schemes would be to do away with corporate taxation altogether, and compensate for the loss of government income by increasing taxes on dividends and capital gains, i.e., impose taxes only when corporate profits flow to the individuals who consume the benefits. The net effect on total tax revenues in the U.S. might be modest, since, because of effective tax avoidance, corporations now contribute as little as 8% to total U.S. tax revenue [Clausing:04]. Such a radical change would reduce the motivation for many distortions now seen in corporate behavior. Small businesses that cannot afford the fees and complexity of dealing with taxhavens would no longer be disadvantaged.

Getting effective international agreements seems to be futile, and any single government cannot adequately regulate multi-national enterprises. Current corporate law equates a corporation with a person, although people have such different morals, motivations, and obligations, seen as a philosophical mistake by some [Gore:07]. Humans can not, without creating corporate entities, split themselves into multiple clones that take advantage of differing taxation regimes. In practice, not taxing corporations is such a radical change, affecting so many other aspects of the economy and its public perception that any such change is as unlikely as many other tax reforms that have been proposed [Cray:09].

Why should the computer science community care about IP and taxhavens?

We are proud to be part of the knowledge-based society, having brought forth a new revolution of human productivity in the last 50 years, moving well beyond the industrial revolution that started more than a century earlier. Globalization is held forth as a means to distribute its benefits widely. But the growth of assets in taxhavens deprives workers world-wide of reasonably expected benefits. Those hidden assets have grown to be a multiple of annual industry revenues, and already exceed the assets held in the countries where the IP is being created. The presence of significant IP rights in tax havens provides global corporations with great flexibility to invest capital anywhere, and avoid income due to that IP from being taxed anywhere. The combination of reduced support for education, government research funding, and physical infrastructure, the increased motivation to start new initiatives in semi-taxhavens,

and the imbalance of small businesses versus global corporations is bound to affect the future of enterprises in countries that initiated high-tech industries, although the rate and final magnitude cannot be predicted now. The better educated scientists will be less affected, and feel the effects more slowly. But any industry requires a mix of related competencies. It took 50 years for the U.S. car industry to be reduced to its current state. The velocity of change, when intangibles are involved instead of tangible capabilities, may well be greater. More support for CS education is a major emphasis of the ACM report, but it is unclear where the funding will come from. Discussions affecting future education, leading to knowledge-based industry growth, job creation, protection of retirement benefits, and the required infrastructure are futile if the creators of the required intellectual resources are uninformed about the interaction of IP and capital allocation. Initiating effective actions will be harder still.

Acknowledgments

This exposition has benefited from discussions on the topic with Peter Denning, Joaquin Miller, Erich Neuhold, Claudia Newbold, Shaibal Roy, Stephen Smoliar, Shirley Tessler, Andy van Dam, Moshe Vardi, and unknown, patient CACM reviewers. Any remaining lack of clarity is due to my failure in presenting a novel topic adequately to a technical audience. Any errors and opinions are solely my responsibility.

References cited

- [ACM:06] W.Aspray, F.Mayadas, M.Y.Vardi (editors): "Globalization and Offshoring of Software"; A Report of the ACM Job Migration Task Force, ACM, 2006.
- [Becker:02] Brian Becker: "Cost Sharing Buy-Ins" Chapter in Robert Feinschreiber (editor): *Transfer Pricing Handbook*, 3rd Edition, John Wiley & Sons, 2002, pp. A-3 - A-16.
- [BLS:07] Bureau of Labor Statistics: National Employment and Wage Data Survey; May 2007.
- [Boehm:81] Barry Boehm: *Software Engineering Economics*; Prentice-Hall, 1981.
- [Clausing:04] Kimberly Clausing: The American Jobs Creation Act of 2004, Creating Jobs for Accountants and Lawyers; Urban-Brookings Tax Policy Center, Dec. 2004.
- [Compustat:02] Compustat: Financial Results of Companies in SIC code 7372 for 1999 to 2002.
- [Cray:09] Charlie Cray: "Obama's Tax Haven reform: Chump Change"; CorpWatch, 15 June 2009.
- [Damodaran:06] A. Damodaran: Dealing with Intangibles: Valuing Brand Names, Flexibility and Patents; Working Paper, Stern School of Business Reports. Jan. 2006.
- [GAO:09] GAO, International Taxation: Large U.S. Corporations and Federal Contractors with Subsidiaries in Jurisdictions Listed As Tax Havens or Financial Privacy Jurisdictions; U.S. Government Accountability Office report GAO-09-157, December 2008.
- [Gay:02] J. Gay: Free Software, Free Society: Selected essays of Richard M. Stallman; GNU Press, 2002.
- [Gore:07] Al Gore: *The Assault on Reason*; The Penguin Press, 2007.

- [GrossmanH:01] Gene M. Grossman and Elhanan Helpman: *Innovation and growth in the global economy*, 7th edition; MIT press, 2001.
- [Johnston:03] David Cay Johnston: *Perfectly Legal*; Portofolio Publishers, 2003.
- [Lev:01] Baruch Lev: *Intangibles, Management, Measurement and Reporting*; Brookings Institution Press, 2001.
- [LeveyWC:06] Marc M. Levey, Steven C. Wrappe, and Kerwin Chung: *Transfer Pricing Rules and Compliance Handbook*; CCH, Wolters Kluwer Pub., 2006.
- [Makhlouf:02] Gabriel Makhlouf: List of Uncooperative Tax Havens; OECD's Committee on Fiscal Affairs, OECD, 19 Apr. 2002.
- [PIRG:09] Nicole Tichon: "Tax Shell Game: The Taxpayer Cost of Offshore Corporate Havens"; U.S. Public Research Interest Group , April 2009.
- [Rahn:09] Richard W. Rahn: "In Defense of Tax Havens"; *Wall Street Journal*, 17 March 2009.
- [Rashkin:07] Michael Rashkin: *Practical Guide to Research and Development Tax Incentives: Federal, State, and Foreign*, 2nd Edition; CCH Wolters Kluwer Publications, 2007.
- [SmithP:00] Gordon Smith and Russell Parr: *Valuation of Intellectual Property and Intangible Assets* (3rd ed.); Wiley, 2000.
- [Weissler:02] Robert Weissler: "APA Program Training on Cost Sharing Buy-In Payments"; Transfer Pricing Report 533, February 2002.
- [Wiederhold:06] Gio Wiederhold: "What is Your Software Worth?" *Communications of the ACM*, Vol.49 No.9, Sept. 2006, pp. 65-75.
- [Wiederhold:08] Gio Wiederhold: "Determining Software Investment Lag"; *Journal of Universal Computer Science*, Springer Verlag, Vol.14 (2008), Issue 22, appeared 2009.
- [Wilson:09] Simon Wilson: Is this the end for treasure islands?; *Money Week*, 13 March 2009
- [WTGS:09] Gio Wiederhold , Shirley Tessler, Amar Gupta, and David Branson Smith: "The Valuation of Technology-Based Intellectual Property in Offshoring Decisions"; *The Communications of the Association for Information Systems (CAIS)*, to appear in Vol.23, 2009.
- o ----- o -----

