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Improving the Tax Treatment of Intellectual Property Income in Canada

Federal tax policy should put less focus on R&D spending by business, and more on rewarding the adoption, commercialization and use of innovative ideas – in short, a pull, rather than a push, into R&D activity.

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The Study In Brief

Policymakers are concerned that Canadian businesses invest too little in innovative processes, on the view that this inhibits productivity, growth, and incomes.

The evidence can be found in Canada's low rate of growth in patent registrations and low rates of commercialization of new products and services vis-à-vis other member countries of the Organisation for Economic Co-operation and Development (OECD) and developing economies such as Brazil, China, and India. Some observers express concern over a presumed "innovation gap," and the share of Canadian patents that are held abroad.

Canada's apparently lagging performance presents a puzzle with respect to research and development, because its federal and provincial tax systems treat business R&D spending quite generously, as compared with international peers.

In this report, we address one policy aspect of these issues: the taxation of the fruits of innovation. In discussing the preferential treatment of income associated with business investment in research and development (R&D) and its commercialization and adoption, we pursue what are sometimes referred to as "pull" factors, which encourage firms to adopt innovative processes. In contrast, "push" factors encourage firms to invest in R&D irrespective of its link to innovation or the adoption of new technologies or processes, as is the current case in Canada.

We present an option for modifying – by way of a new incentive model, known as a "patent box" or "innovation box" – Canada's current tax treatment of the income derived from exploiting the fruits of R&D. This would complement and in part refocus the tax preferences that business expenditures on R&D now receive.

Under our suggestion, businesses possibly would receive less tax relief for conducting R&D, and more for adopting, commercializing, or otherwise exploiting the output of the R&D process – in short, a pull, rather than a push, into R&D activity.

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Policymakers, analysts, and political leaders in Canada often express concern over low domestic investment in research and development (R&D). They draw links to a commensurately low rate of technology commercialization and adoption, and by extension to sluggish productivity growth in comparison with that in many other Western countries, the United States in particular (see Carney 2012; Flaherty 2012; Jenkins 2011).

At the political and policy level, current shorthand refers to an "innovation gap," implying that business should invest more in innovative processes (see Flaherty 2012; Macklem 2012). On this view, altered business behaviour potentially would address, for instance, Canada's low rate of growth in patent registrations and low rates of commercialization of new products and services vis-à-vis other member countries of the Organisation for Economic Co-operation and Development (OECD) and developing economies such as Brazil, China, and India.

This *Commentary* addresses one policy aspect of these issues: the taxation of the fruits of innovation. In discussing the preferential treatment of income associated with business investment in R&D and its commercialization and adoption, we pursue – in the spirit of McKenzie (2006) and Parsons (2011) – what are sometimes referred to as "pull" factors, which encourage firms to adopt innovative processes. In contrast, "push" factors encourage firms to invest in R&D irrespective of its link to innovation or adoption of new technologies or processes, as is the current case in Canada.

In the *Commentary*, we present an option for modifying – by way of a new incentive model – Canada's current tax treatment of the income derived from exploiting the fruits of R&D, complementing and in part refocusing the tax preferences that business expenditures on R&D now receive. Under our suggestion, businesses possibly would receive less tax relief for conducting R&D, and more for adopting, commercializing, or otherwise exploiting the output of the R&D process – in short, a pull, rather than a push, into R&D activity.

In taking this approach, we hope to address the view – reflected in the panel report of the Review of Federal Support to Research and Development (Jenkins 2011); and Ottawa's 2012 budget response to it – that Canada's R&D investment performance and productivity growth rates are puzzlingly low. Puzzling, because that performance is less robust than domestic tax support for R&D and innovation suggests it ought to be, given that Canada's R&D tax treatment is one of the most generous in the world (Parsons 2011). That tax support is delivered at the federal level through deductions from

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income for certain R&D spending and through the large and partly refundable and recently revised scientific research and experimental development tax credit (SR&ED). These benefits typically are complemented by provincial preferences. Tax policy should not be regarded as a block to R&D spending or to investment in it (see Parsons 2011), yet performance issues in Canada's innovation value chain remain. What, then, to do?

Several countries focus attention on the level and scope of their tax incentives to attract, retain, and grow R&D activity, and to encourage within their borders more commercialization and adoption of the intellectual property (IP) developed from such activity. Some have introduced, in particular, a tax regime known as the "patent box" or "innovation box," which typically reduces the normal corporate tax rate for income derived from patents and, potentially, other IP-derived income. Most notably, the United Kingdom intends to introduce a Patent Box regime in 2013 "to create a competitive tax environment for companies to develop and exploit patents and other similar intellectual property in the UK" (United Kingdom 2012a).[1]

In light of its apparently lagging performance, should Canada consider a patent or innovation box? Would such a regime help to reverse current negative trends? What might be the economic benefits? How much would it cost, and what are risks of failure?[2]

We begin by looking at broad economic and tax policy questions regarding intellectual property. We follow with an analysis of recent trends in IP ownership, as measured by patent ownership transfers and their ultimate geographic locations, in the interest of making some inferences regarding tax policy. We then briefly review other countries' current and proposed tax regimes, take steps toward answering the questions just posed, and examine the relationship between R&D and production activity. We conclude by proposing that, in responding to these issues, the federal government seriously consider adopting the patent or innovation box model.

Economics and the Patent Box

Technological change is at the heart of long-run economic growth, and is the source of the productivity growth that raises living standards and real incomes (Aghion and Howitt 1998). Over the past generation, technological change in developed countries has shifted businesses' focus – and, therefore, the skill sets of the individuals they employ – toward what is often referred to as the "knowledge-based economy," in which firms' success depends on the IP they can develop or acquire and commercialize globally. This means that successful companies, to be competitive in the global market, must invest continually in R&D to develop new or enhanced products and services.

A key consideration for a business is not only where to carry out development, or R&D activities in particular, but where and how best to exploit its IP. Tax considerations can be important drivers of these decisions. Countries have long provided tax incentives and subsidies to attract R&D activity. These incentives are usually justified on economic grounds: tax and other subsidies compensate firms for the positive externalities that arise from the R&D activities they carry out and the IP they produce.

1 Having raised the issue of R&D activity in the "patent box" context, we wish to emphasize that the phrase is intended to denote intellectual property in the conceptual sense – meaning innovative products and processes and the application of new knowledge to them – rather than patents specifically or intellectual property in the strict sense of legally defensible IP.

2 These questions have also been raised by Mustard, Pantaleo, and Wilkie (2009); and Parsons (2011).

Because firms and society at large benefit from the R&D activity others carry out – a positive externality – individual firms might have an incentive to underinvest, or to invest less in R&D than is socially optimal. In addition, given the increasing importance of the knowledge-based economy and globalization's unprecedented international flows of goods, capital, technology, and people, countries have strong motives to maintain or enhance such incentives in pursuit of comparative advantage. Consider, for example, that

- R&D is often associated with increased productivity at the individual firm level and at industry levels in the country where it is conducted;
- R&D activities, including the exploitation of developed or acquired IP, are increasingly mobile in the wake of the telecommunications revolution;
- Facility location decisions are often based on R&D tax incentives and on the complexity and compliance burden of a country's tax administration system.[3]

Adding to the challenge policymakers face is the effect of international tax rules on the taxation of crossborder royalty payments and other income derived from IP. As the Advisory Panel on Canada's System of International Taxation (2008) notes, in most circumstances such income earned by a Canadian company is fully taxable, while income of a foreign affiliate of a Canadian company located in a low- or zero-tax jurisdiction is subject to a lower rate of foreign tax, and usually can transfer such active business income to Canada free of Canadian tax. This lack of neutrality in the tax treatment of IP-derived income – a feature common to most countries' international tax rules, including those of the United States and the United Kingdom – is an incentive for Canadian companies to locate and commercialize developed or acquired IP in low-tax foreign jurisdictions.

Indeed, the mobility and globalization of important factors of production is an issue for tax base design for all open economies (see Hines and Summers 2009). The geographic location of such factors is by definition more likely to be sensitive to tax base and tax rate choices in host countries than are other production inputs, land, buildings, or physical plant. As a result, it is likely that at least some of the economic activity associated with developing, acquiring, and commercializing IP occurs "offshore." This explains, for example, the reason the Obama administration is proposing to tax certain income earned from IP by US multinationals that has been transferred from the United States to a low-tax jurisdiction (United States 2012). In addition, some commentators argue that domestic and global transfer-pricing rules facilitate the transfer of IP income to low-tax jurisdictions, and point to the need for some sort of global apportionment formula or worldwide form of consolidation to negate the impact of such transfers (Kleinbard 2011).

The Obama administration's proposal, however, is a "stick" approach that could have the effect of reducing the level of IP development that currently takes place in the United States. In contrast, a patent box regime reflects a "carrot" approach to encouraging domestic IP ownership and development, and could have the following benefits.

- For countries such as Canada, a patent box would be more consistent with other incentives available for R&D and with the domestic tax administration system, and would help to ensure that more of the economic benefits arising from R&D remain in Canada.

3 None of this is to suggest that non-tax factors such as the quality of research universities, immigration policy, education, or patent protection are unimportant to location decisions. In particular, host country personal income tax rates seem to affect decisions significantly for upstream services or headquarters (Strecker, Egger, and Radulescu 2012).

- More offshore economic activity associated with IP ownership – including tax revenues on income derived from such property that might otherwise go to foreign jurisdictions – could be transferred onshore.
- A patent box system would eliminate costs that multinationals incur to design, establish, and maintain offshore structures, to the extent that they were to take advantage of the new regime rather than conduct potentially qualifying activity abroad.
- A patent box regime carefully drafted to target desired behaviour might increase administrative and compliance complexity for multinationals and the Canada Revenue Agency, but it would reduce the business compliance and tax administration costs associated with transfer-pricing rules that relate to offshore activities.[4]

What Might Canada Gain?

Whether Canada should consider implementing a patent box regime is a question separate from whether, more generally, such an approach offers an opportunity to enhance innovation through novel fiscal policy. Patent box regimes are a convenient point of reference for considering whether well-known fiscal or industrial policy tools might be redeployed or reconfigured to improve the domestic economy's potential growth. The aim is to create opportunities for economic activity that otherwise might not be present and, arguably, to reduce the migration of existing domestic activity toward more tax-favoured jurisdictions. On this view, a policy change would not introduce a tax or economic distortion so much as it would remedy the existing distortions that might be attributable to the international tax system.

The catalyst of a patent box regime is the preferred taxation of returns arising from the exploitation of R&D initiatives conducted locally or the ownership of IP rights that capture successful research. In the most limited case, it might be sufficient simply to own IP locally, and exploit it by earning royalties and other fees by licensing it to others. The royalty income would be taxed at a preferred rate. Apart from "doing" research – even on such a large scale that such activity would be self-standing within an industry sector – the mere ownership of exploitable rights does not necessarily entail much economic activity, and might not give rise to resulting or supporting economic activity. When speaking of a patent box, it is in fact common to focus on the ownership of IP rights such as patents: where they are owned, if their ownership changes by jurisdiction, and so on. It might be, though, that the issue of who owns patents and where the registered ownership is located is not important and that the trade balance of inflows and outflows of patent royalties is irrelevant, in which case the issue should not dominate how policy questions are framed.

A more interesting approach might consider the extent to which further applied development and production, using IP arising from tax-supported R&D, is localized, which would raise the question of whether some degree of tax relief could be extended to income from production, as well as that attributable strictly to a return on the IP, perhaps measured by reference to a derived internal "royalty" that forms part of the income from using the research in productive activity.

4 A patent box regime likely would influence a corporation's evaluation of the relative costs versus perceived benefits associated with developing, owning, and exploiting intangibles outside the home country (Canada in this case) shielded from tax by that country's foreign affiliate or controlled foreign corporation rules. The latter is the subject of considerable and increasingly pointed international commentary (OECD 2013), and, in this context, the proposed change could be the catalyst for incremental domestic economic activity.

In both models, the tax preference is the price paid by the consumer – the public economy at large – for a presumptively valuable economic outcome that otherwise might not arise. That raises key questions: what are we buying with forgone tax revenue? Do we recover it later with a sufficient incremental return? The answers have two connected aspects.

First, Canada could be a competitive, if not a relatively more desirable, host for business activity directly connected to R&D, as well as for resultant production. But criticisms of the patent box idea, based on the potentially strong case for the alternative of lower corporate tax rates generally, need to be addressed.

On one view, tax expenditures generally are not an effective way to encourage sustainable economic activity. Instead, a broad tax base and generally lower corporate tax rates would allow market circumstances to determine the kinds of industrial activities the market values, and this is the current policy thrust in Canada. In particular, international relocation of IP activity might cause all governments to lose some revenue, and the relocation to the country with the patent box regime might be insufficient to offset the loss of existing tax revenue, creating the largest loss in the host nation.

This goes to the question of how effective reducing tax on IP income would be at encouraging or bringing in R&D, and whether the benefits of that outcome would outweigh the revenue losses of the associated tax reduction. One critique of the UK proposal argues that, "[i]n contrast to R&D tax credits, a Patent Box is poorly targeted at research activity that generates spillovers" (Griffith and Miller 2011, 231). Some authors note, however, that the patent box might be a second-best means of taxing more mobile income at a lower rate and holding higher taxes on less mobile corporate income (Griffith and Miller 2011; Graetz and Doud 2013). Arguably, this accords with general public finance principles.

At the same time, a patent box's preferential rates would amount to a reduction in marginal effective tax rates on business investment in innovative production processes and related intangibles and the fruits thereof, and thus such a regime would be compatible with the case for general tax rate reduction. Another observation is that a patent box's tax preferences might generate incremental income tax revenue. If research and co-production activity would not otherwise occur, or if it would do so elsewhere but in circumstances such that Canada was unable to, or under existing tax rules governing the taxation of foreign income would not, collect tax revenue, then any degree of taxation on income from activities that are located or relocated to Canada would be a "found" fiscal resource. In this instance, a modest statutory tax rate on patent box activity would produce significant revenue relative to the alternative. In this case, the tax preference could partially fund itself, plausibly to an extent approaching rough neutrality, and perhaps generating long-term net fiscal and other benefits.

Second, identifiable and specific spillover effects – externalities – are foreseeable for communities that host patent box and related industry activities. Benefits associated with concentrations of research activities and symbiotic or sympathetic reactions of technological developments to one other, and related concentrations of human capital – an educated, well-trained, sophisticated work force – are a reasonably well understood outcome. An extensive literature suggests that the physical location of innovative activity is important to regional knowledge spillovers and, hence, to growth. In particular, "citations to domestic patents are more likely to be domestic, and more likely to come from the same state and [metropolitan area] as the cited patents…reflecting the pre-existing concentration of related research activity (Jaffe, Trajtenberg and Henderson, 577)."

Another, more recently developed aspect is the co-location of productive activities associated with the application of IP developed by research. There

is some evidence that firms are inclined to locate production facilities in the vicinity of previous industrial investments and R&D activity, which suggests that externalities are associated with these separate activities that co-location might capture.[5] Evidence also suggests that, in some industries, R&D is enhanced and more successful when it is located near related production operations. Recent econometric evidence is powerful, and suggests that, "there are important linkages between production and R&D within the firm that benefit from geographic proximity (Tecu 2011)." Further, "pull" factors such as a patent box or preferential tax rates on patent income, rather than push factors such as tax credits, attract innovative projects to a statistically significant extent, and improve R&D and patent quality.[6] "R&D tax credits and tax allowances are in turn not found to exert a statistically significant impact on project quality," (Ernst, Richter and Riedel 2013).

Notwithstanding dramatic telecommunications improvements in recent decades, technology diffuses slowly in geographic terms: proximity to adoption leaders matters to the spread of new technology (Comin, Dmitriev, and Rossi-Hansberg 2012). These co-location or geographic proximity factors also have human dimensions: when science superstars move, article-to-article citations of their work continue apace, but in the area from which the star departs, related article-to-patent and patent-to-patent citations decline (Azoulay, Graff Zivin, and Sampat 2011). This implies that face time matters in the transmission of pure research to the innovation and adoption stage, which, in turn, is important to generating and capturing spillovers.

These connections, it should be noted, are functional; they have little to do with the legal ownership of the fruits of R&D, and much do with where, by whom, and with what applied relevance R&D is conducted. These outcomes would be consistent with Canada's evolving innovation policy, which is targeted at the industrial activity Canada wishes to encourage, while leaving considerable latitude to the "doers" of research as to where they direct their energies. These connections also foreshadow direct and immediate industrial externalities, and others, too, are foreseeable. R&D and resulting production activities take place within communities, and the infrastructure necessary to support these activities is itself a source of economic expansion and benefit. Supporting retail and other services, for example, are natural extensions of business concentrations. Income generated by these and other externalities would be taxed in the normal fashion, under a patent box regime, so that, in part at least, elements of Canada's applied innovation policy would be self-supporting.

Evident in this discussion is the importance of perceiving the patent box idea as involving more than conducting research and earning a royalty-like return. It allows others, even members of the same corporate family, to use resulting IP and other knowledge. A patent box strategy, therefore, should comprehend more than the production and ownership of patents, even if market forces would generate spillovers as a natural outcome.

5 An extensive analysis of firm-level data from the European Union indicates the importance of locating firms' production, headquarters, and R&D facilities close together; see Defever (2012).

6 In the US chemical industry, for example, an average-sized production plant raises a firm's R&D productivity, as measured by patents issued per employee in the metropolitan area, by about 2.5 times, with similar results in other sectors. Contrarily, however, co-location with academic research facilities does not have a similar positive impact, casting some doubt on the concept of a university R&D–industrial clustering linkage (see Tecu 2011). A range of analogous studies regarding R&D location and co-location, with predominately supportive findings, is reported in Graetz and Doud (2013).

Having stated that economic gains might be associated with the preferential treatment of income derived from IP, and that these gains might drive sufficient economic activity to offset some or all of the revenue cost of any such proposal, we recognize that budget constraints nonetheless might constrain policy choices. On this point, we observe that, after weighing the costs and benefits of the patent box proposal, the federal government, should it feel constrained with respect to policy action, might wish to shrink the tax expenditure associated with the extant, and recently revised, SR&ED credit, with no net loss of tax support for businesses that adopt innovative technologies.[7]

As noted earlier, the focus should not be necessarily on the ownership of rights in themselves, as these might not be associated with continuing productive activity. Rather, the force of policy developments in this area should not be merely to reward or subsidize generators of ideas, but to facilitate those ideas being put to productive use in Canada, which, in turn, would improve firms' comparative advantage in global markets. Accordingly, a patent box should include preferential treatment for income derived from IP acquired elsewhere, including, necessarily, IP acquired through foreign affiliates. To do otherwise, from the perspective of either economic theory or business practice, would be to fall into a not-invented-here trap, and would fail to recognize the economic benefits of domestic development and exploitation of acquired IP.

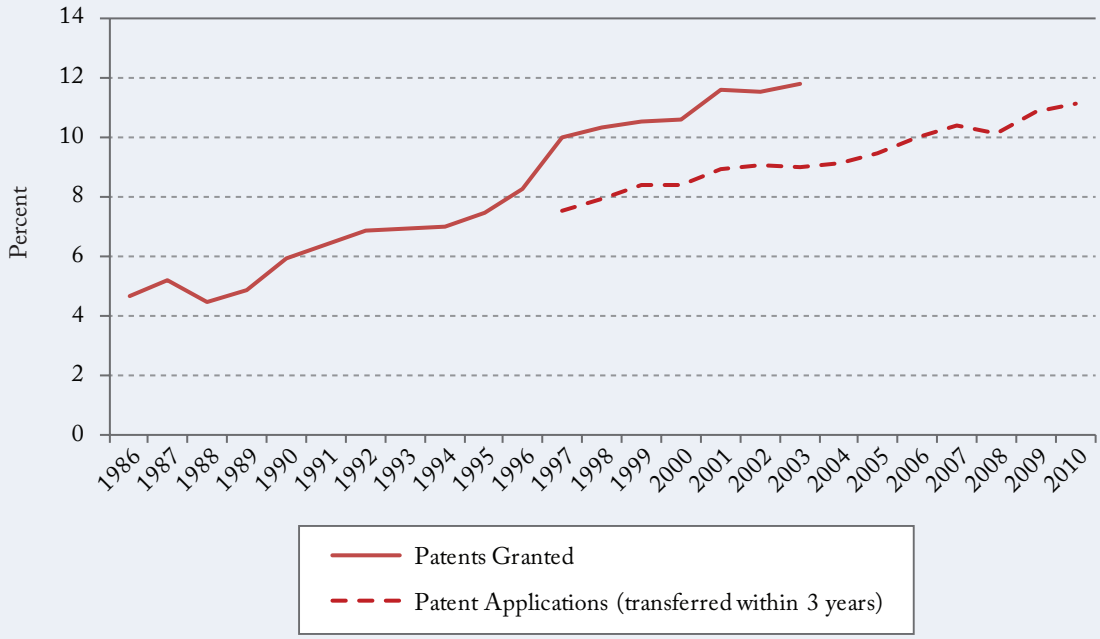
In summary, what Canada could gain from the introduction of a patent box regime is a weave of possible mutually dependent or symbiotic effects. They include increased R&D activity compatible with Canada's innovation policy, resulting in increased domestic productive activity aimed at applying and exploiting successful product and process technology. Further gains include enhanced and focused research arising from the proximity of research activities to productive applications, and the development of communities and employment that might furnish the necessary infrastructure to support the research and resulting industrial activities. Even if these outcomes would be difficult to verify empirically, they are intuitively plausible. As such, they provide points of reference for fashioning bespoke tax policy – inspired by the patent box – to achieve them.

A Subsidiary Issue: Concerns over IP Ownership and Control

Many analysts have flagged concern over Canada's share, or Canadian firms' share, of patents issued globally and the large extent to which outflows of patent licensing payments exceed similar inflows (Mazurkewich 2011). Notably, worries have arisen over the transfer of patents previously owned by Nortel and the extent to which those patents were developed while the firm benefited from Canadian tax preferences for R&D activity (McKenna 2012). To most economists, however, such concerns seem misguided. It is not necessary for a firm to invent technology, or to develop IP, to take advantage of it, whether in machinery and equipment, processes, or products. Firms reasonably might choose to focus on technology adoption, rather than on creation, and to adopt intermediate inputs and production mechanisms in a manner that maximizes profits and, therefore, the incomes of their employees and shareholders.

7 Current federal tax revenue foregone, by way of the SR&ED, is just under $2 billion annually (Canada 2013). That number will fall as the 2012 federal budget measures take effect, which will lower the rate at which the credit is granted with respect to eligible expenditures, and restrict eligible amounts to exclude, among other things, capital expenditures.

Figure 1: Share of Patents Transferred Internationally – by Year of Canadian Application



Source: C.D. Howe Institute Canadian Patent Database 2012, and Canadian Intellectual Property Office.

What the Data Say

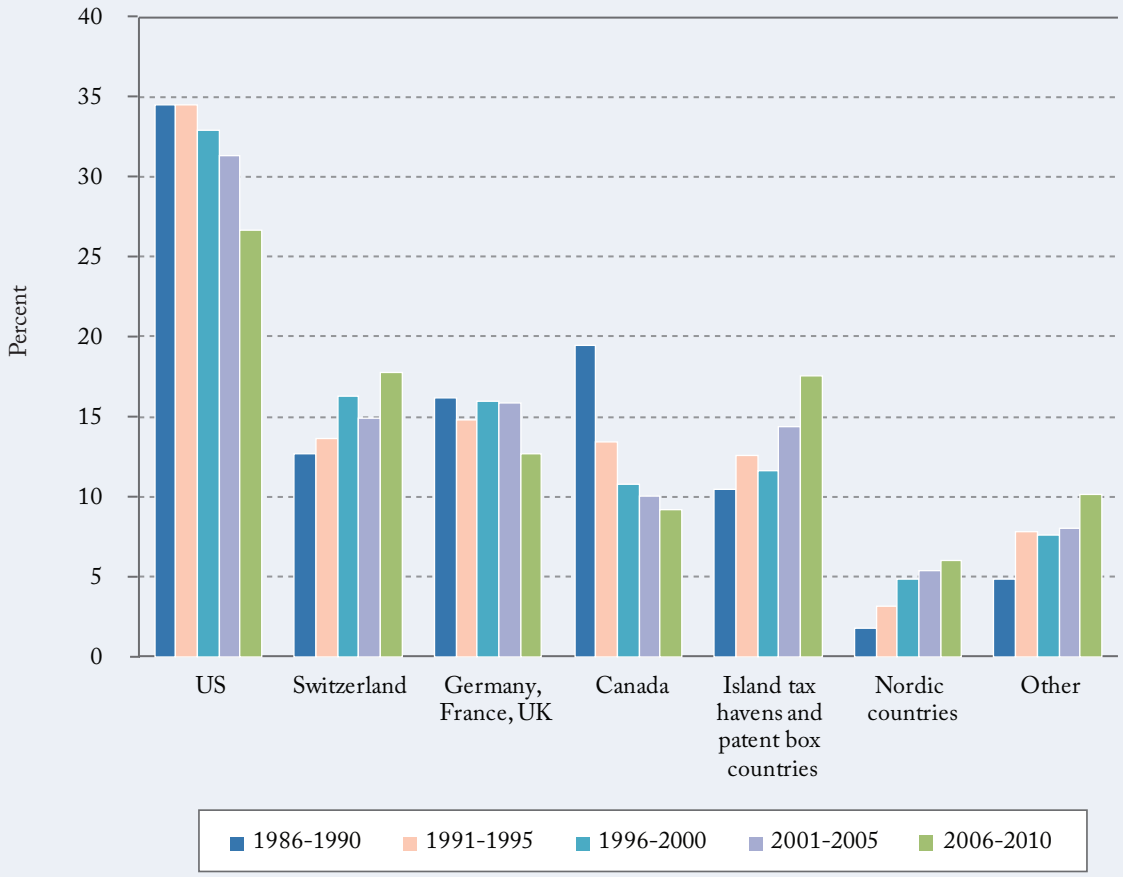
Having contemplated new empirical work that might shade conclusions about the relevance of patent ownership, what do the data say about Canadian patent ownership and the effects of policy, both domestic and foreign, on trends therein? To answer the question, we make use of a specialized database of patent applications filed with the Canadian Intellectual Property Office since 1980, and focus on the subset of patents whose ownership title has since changed.[8] This data filter is intended to ensure that our focus is on patents of demonstrable, as opposed to trivial or nuisance, value: if patent ownership has been sold, some market participants value it.

Our analysis makes possible a number of striking observations, of which two are particularly salient.

First, over the course of the past three decades, the number of patents transferred internationally, as a share of Canadian patents granted or applied for, has increased steadily (see Figure 1). This observation leads to one or both of the following conclusions, which require few or no assumptions: a) that the acquirers were resident in locales where they wished to exploit patents for ordinary business reasons, or b) they had tax or regulatory reasons for holding ownership of patents in jurisdictions other than Canada, and – by extension but not by inference – that the patents were more valuable to

8 The authors thank Robbie Brydon, Research Intern at the C.D. Howe Institute, for undertaking this large project.

Figure 2: Share of Internationally Transferred Patents – by Year of Final Transfer



Sources: C.D. Howe Institute Canadian Patent Database 2012, and Canadian Intellectual Property Office.

acquirers in other jurisdictions than they were to vendors in Canada.

The second observation is that the destinations of transferred patents show elements of a pattern (see Figure 2). Patents applied for in Canada have been shifting in ownership, in statistically significant percentages, to island tax havens and patent or innovation box jurisdictions – other than the Netherlands – and "other" countries; the last implying that developing nations in general have been improving their industrial process capacity. With respect to patent or innovation box jurisdictions and island tax havens, the increasing ownership share appears to exceed their relative shares of global economic growth. This suggests other factors are at play, such as the decision

of a corporate group to structure affiliates so as to receive patent licence or royalty income in favourable tax jurisdictions.[9]

The natural inference is that, beyond generic economic or business factors such as industry consolidation, tax factors are at work. This prompts the question of what has been occurring in the tax treatment of IP income in recent years in other jurisdictions.

What Other Countries Are Doing

Today's multinational companies can benefit from several jurisdictions that offer favourable regimes for IP. Whereas until recently it was common to find small countries creating tax incentives aimed at increasing IP and related economic activity in their jurisdictions, larger countries such as France and the United Kingdom also now offer regimes with similar features, possibly to keep at home IP developed domestically.

Considerations, or policy criteria, that are useful in describing IP regimes are as follows, adapted in part from Merrill et al. (2012):

1. What IP qualifies?
   a. Patents from other countries' issuing offices? If so, which?
   b. Other IP, e.g., copyright, formula, process, design, pattern, knowhow, format?
   c. Self-developed only, acquired or under licence (partial or exclusive)?
   d. Material IP development (R&D) activities required to be performed in-country?
2. What income is eligible?
   a. Gross or net IP license income?
   b. Capital gains?
   c. Self-developed IP embedded in price of goods or services?
   d. Bundled IP licenses?
3. How is eligible income treated?
   a. Deduction or partial exclusion? Rate?
   b. Use of net operating losses and credits against tax on income in the box?
4. Other:
   a. What is the revenue cost?
   b. Elective or mandatory? If elective, for all IP or per unit of IP?
   c. Coordination with existing R&D incentives ("double dip" issues).

The United Kingdom: The Most Recent Actor

The introduction of a patent box regime is a feature of the UK government's growth agenda, published in March 2011 (United Kingdom 2011). The government has stated that the purpose of the regime – draft legislation for which was made public after two rounds of consultation – is "to provide an additional incentive for companies to retain and commercialise existing patents and to develop new innovative patented products. This will encourage companies to locate the high-value jobs associated with the development, manufacture and exploitation of patents in the UK and maintain the UK's position as a world leader in patented technologies" (United Kingdom 2012a).

The UK government expects the direct negative revenue impact of the proposed regime, in its steady state, to be approximately £1.1 billion annually (United Kingdom 2010). As noted, one of the objectives of the regime is to make the United Kingdom more competitive vis-à-vis other jurisdictions regarding the retention and location of IP. Presumably, the aim is also to ensure that the attractive jobs that are associated with IP development and commercialization remain in the United Kingdom: "the introduction of the Patent Box in the UK would further the Government's

9 Switzerland's increasing share of transferred patents seems to be dominated by pharmaceutical patents, influenced by global consolidation in that sector and by regional tax preferences within Switzerland.

aim of ensuring that the UK is an attractive place to do business, and that businesses in the UK can compete effectively within the global market place (United Kingdom 2012b)."

GlaxoSmithKline, the multinational pharmaceutical firm, announced in March 2012 that it was building its first manufacturing facility in the United Kingdom in 40 years, in large part because of the introduction of the patent box regime. As the company noted, "[t]he introduction of the patent box has transformed the way in which we view the UK as a location for new investments, ensuring that the medicines of the future will not only be discovered, but can also continue to be made here in Britain."[10]

Ireland: First In, First Out, Still Present

Ireland's version of the patent box, aimed at attracting multinational business investment, began its evolution almost 40 years ago. A ruling by the European Union, however, struck down the tax preference, pushing Ireland to eliminate its provisions while maintaining a capital deduction for the cost of acquired IP, including trademarks and copyright (Diamond 2009). These provisions remain important to multinational enterprises with significant IP revenue.

The Netherlands: Recent Major Changes

In 2007, the Netherlands introduced a 10 percent preferential tax rate to be levied on patent income. This became an "innovation box" in 2010, broadening the scope of IP covered, and the relevant tax rate was halved to 5 percent. Non-patent IP must be at least 50 percent developed within the Netherlands, and all innovations must be self-developed rather than acquired, with some exceptions. Other countries have taken more liberal approaches to these issues.

China: A Big Player?

The Chinese tax system directs significant resources toward firms conducting R&D in China, through special treatment at various stages. According to PriceWaterhouseCoopers (2010), income from patents developed in China, up to RMB 5 million, is tax free; income above that amount is taxed at half the normal rate. There is also a trial scheme exempting R&D centres from sales tax on purchased equipment, on top of a pre-existing import tax exemption (Hodkinson 2011; McGregor 2010).

The United States: Many Ideas, No Fixed Plans

In addition to the Obama administration's proposed preferred tax treatment for US multinationals that repatriate IP activity and related income (United States 2012), the House Ways and Means Committee in 2011 presented draft provisions for several possible models, including a preferential rate of tax for income derived from the foreign exploitation of IP, with a similarly low rate applied to income derived from domestic exploitation of IP, effectively creating a patent box (see Graetz and Doud 2013). At the time of writing, no proposals had advanced through the legislative process.

Patent Box or Otherwise: Advance Rulings

The Netherlands, the United Kingdom, Australia, and France have mechanisms for providing some form of advance ruling on tax eligibility for IP and R&D-related qualification issues (see Table 1). As Kessler and Eicke (2008, 846) note, "[a]n attractive

10 "Glaxo invests £500m in UK and builds new factory," BBC, March 22, 2012; available online at http://www.bbc.co.uk/news/business-17465090.

regime must include a user-friendly advanced ruling system." This observation is important to Canada, where industry practitioners repeatedly have expressed concern over timely determination of eligibility for the SR&ED credit, calling into question the extent to which the credit is applied to activity that would have occurred anyway had the credit not been in place. Because large investment projects typically have long timelines from concept to completion, the need for relatively speedy financial decisionmaking with respect to them suggests that the longer and more variable the process that determines SR&ED eligibility, the more likely it is that the projects that do proceed would have proceeded in the absence of the tax preference.

There have been few recent developments elsewhere, although Australia has expanded its R&D tax credit modestly (Australia 2011). Notwithstanding some public discussion on the issue, Australia has no evident plans to institute a patent box or similar mechanism.

Recommendations

There is a strong case for considering a preferential tax regime in Canada with respect to the income derived from IP. With this view in mind, we frame our recommendations as a guide to legislation, drawing heavily on recent descriptions from the UK Treasury.

First, the *Income Tax Act* should be amended to provide a reduced rate of income tax of 7.5 percent, or half the current federal rate, on qualifying income earned through developing and commercially exploiting patented inventions and innovations substantially connected to new or improved products, services, and related processes. The underlying patents and other innovations would have to be owned by the taxpayer, or the taxpayer would have to have, for an entire country, the exclusive licence to such owned or acquired patents and other innovations, and involve material IP development in Canada.

Second, qualifying income would include income derived from:

- the licensing of rights to use and exploit such patents and other innovations;[11]
- sales of a patented invention or products, services, or processes that incorporate a patented invention or other innovation that either would not exist or, if in relation to an existing product, service, or process, contributes to a substantial transformation of that product, service, or process;
- uses of the patented invention or other innovation by the taxpayer in carrying on its principal business; and
- patent infringement income.

Income would qualify provided that:

- the patented invention or other innovation arose from qualifying scientific research and experimental development carried on by the taxpayer alone or in conjunction with related or unrelated parties, including not-for-profit organizations such as universities, under commercial cost-sharing arrangements as otherwise contemplated in the Act, all or substantially of which are carried on in Canada;
- all or substantially all of the activities associated with the continuing development of the patented invention or other innovation and its application, including acquired patents and other innovations, are carried on in Canada;
- the rights, whether by reason of a patent or on another basis for other innovations, to further development of any qualifying patented invention or other innovation belong exclusively to the taxpayer, whether arising from the direct activities of that taxpayer or activities undertaken for it or on its behalf by others;

11 Some attention will be needed regarding the appropriate treatment of the proceeds of sales of IP and potential capital gains.

Table 1: Taxation of Income Derived from Intellectual Property, Selected Countries

Country	Exemption Rate	Regular Corp. Tax Rate	Effective Corp. Tax Rate on IP	Cap on Benefit	Qualifying IP	Qualifying Income	Expenses that Reduce Qualified Income
		percent					
Belgium	80% of patent income	20	6.8	100% of pre-tax income	Patents and supplementary protection certificates	Patent income less cost of acquired IP	Expenses except license fees and amortization of acquired patents
China	100% of income up to RMB 5M ($800K) and 50% above	25	0/12.5	-	Registered patents and know-how	-	Most expenses
France	N/A	34	15	No	Patents, extended patent certificates, patentable inventions and industrial fabrication processes	Royalties net of cost of managing qualified IP	Includes management expenses related to licensing IP
Hungary	50% of royalties	9.5	19	50% of pre-tax income	Patents, trademarks, business names, secrets, know-how and copyrights	Royalties	-
Ireland	Capital cost of IP	12.5	2.5–12.5	80% of pre-tax income	Most IP	-	Capital expenditures
Luxembourg	80% of patent income	17	5.9	No	Patents, software, copyrights, trademarks, designs, or models	Royalties	Most expenses
Netherlands	N/A	25	5	No	Patents or IP from qualifying R&D	Net income from qualifying IP	Most expenses. Losses are deducted at regular rate of 25%
Spain	50% of patent income	25	15	Six times development cost	Patents, formulas, processes, plans, models, designs and know-how	Gross patent income	None
Switzerland	Varies by canton	21	0–12	No	Most IP	-	Most expenses
United Kingdom	Flat rate on profits above 110% of costs	23 (in 2013)	>10	No	Patents, data protection and plant varieties with "active ownership"	Net income from qualifying IP	Most expenses

Table 1: Continued

Country	Acquired IP Qualifies?	Can R&D be performed abroad?	Embedded royalties qualify?	Gain on sale of IP included?	Credit for tax withheld on qualified royalty?	Applicable to existing IP?	Year Enacted
Belgium	Yes, if further developed	Yes	Yes	No	Yes	IP granted or first used after Jan. 1, 2007	2007
China	Yes	No	-	-	-	-	2008
France	Yes, under conditions	Yes	No	Yes	Yes	Yes	2001, 2005, 2010
Hungary	Yes	Yes	No	Yes	Yes	Yes	2003
Ireland	Yes	Yes	-	-	-	Yes	2009
Luxembourg	Yes, from external companies	Yes	Yes	Yes	Yes	IP developed or acquired after Dec. 31, 2007	2008
Netherlands	Yes, if further self-developed	Yes, only for patents	Yes	Yes	Yes, with limitations	Patents developed or acquired after Dec. 31, 2006	2007/2010
Spain	No	Yes	No	No	Yes, with limitations	Yes	2008
Switzerland	Yes	Yes	-	-	-	Yes	N/A
United Kingdom	Yes, if further developed	Yes	Yes	Yes	Yes	Yes	2013–2017 phase-in

Sources: Atkinson and Andes (2011); HM Treasury (2011); PwC (2010); Merrill et al. (2012).

- the taxpayer has exclusive rights to use and exploit any rights to patented inventions or other innovations for which the taxpayer is a licensee; and,
- the commercialization of the patented invention or other innovation, including through the manufacture of products for sale or lease and the provision of services, takes place in Canada and is conducted by the taxpayer or another related Canadian resident taxpayer.

Third, the computation of qualifying income should begin with total profits (net income) from the sale of products incorporating a patent or innovation or from the licensing of the patent or innovation. Such profits should be reduced for a markup (the United Kingdom uses 10 percent) on certain internal costs (for example, employee costs), as well as for embedded brand value.

Fourth, current tax incentives under the SR&ED program should be integrated and included in the computation of qualifying income. Patent or innovation box losses in a particular year could be carried back or forward, but only to reduce the taxpayer's qualifying income in a previous or future taxation year. Refundable SR&ED credits could be recaptured, or deducted, at a rate of 10 percent annually, from subsequent qualifying income.

The patent or innovation box regime should be elective for taxpayers, although restrictions and anti-avoidance rules would need to be developed to prevent inappropriate planning or tax arbitrage by a taxpayer or a related group of companies. This might imply a need for irrevocable elections: firms that opted in to the patent box regime would remain there.

The Revenue Costs

We leave for further analysis a serious estimate of domestic costs and benefits of Canada's proceeding toward a patent or innovation box mechanism. We note, however, following on Merrill et al. (2012), that Canada's gross domestic expenditure on R&D and business sector expenditure on R&D are very similar to those in the United Kingdom as shares of gross domestic product (GDP) (OECD 2012). Relying, then, on the UK estimate of £1.1 billion annually (United Kingdom 2010), and scaling by relative size of GDP, we estimate the steady-state annual revenue cost, beginning in fiscal year 2015/16, would be approximately $1.0 billion. As against this amount, we anticipate economic benefits and federal and provincial revenue to flow from heightened domestic R&D activity and the exploitation and adoption thereof. Without attempting to quantify the potential dollar impact on GDP, we nevertheless expect the spillover effects on innovation and productivity would be both positive and significant.

Addressing Concerns with a Patent Box Regime

In response to criticisms of the new UK tax model (Griffith, Miller and O'Connell 2011) and to comments by reviewers of earlier versions of this *Commentary*, we address the following concerns about a patent box regime.

> *The "patent box" mechanism would introduce new compliance and tax administration costs and complexity.*

Defining the income that qualifies for preferential treatment would involve meaningful administrative and compliance costs. Factors mitigating such concerns include the fact that much of the compliance infrastructure already exists through the SR&ED mechanism. Further, the availability of the patent or innovation box would displace, partially or completely, the offshore tax structures that firms might otherwise face incentives to create, and hence their associated administration and compliance costs.

> *The proposal would not survive ordinary cost–benefit analysis.*

A full economic evaluation of the costs and benefits associated with the patent or innovation box proposal is beyond the scope of this review. We note, however, that recent economic evidence, discussed above, indicates that preferential tax

rates related to IP income are likely to generate better quality R&D and improve the productivity of R&D investment, with benefits to co-located manufacturing activity, more so than existing domestic tax treatments thereof (Ernst, Richter and Riedel 2013).

> *A preferential tax rate for patent or innovation box income would undermine the tax base, and reverse the trend in federal tax policy toward broadening the base and lowering tax rates.*

Some reviewers expressed concern that our proposal embodied a shift away from the base-broadening exercise that Canadian tax policymakers have pursued, sporadically, for more than a decade – in particular, the elimination of the manufacturing and processing deduction in favour of lower statutory tax rates across the board. We have noted that the proposal would redress the distortions that seem to accompany the international tax system, thereby improving its neutrality with respect to the geographic location of economic activity.

Further, and in particular, the patent box proposal would accommodate or capture the positive economic externalities associated with the conduct of R&D and the adoption of innovative processes, in accordance with common public finance principles. Moreover, the existing R&D tax support mechanism is broadly viewed as ineffective in achieving its aims (McKenzie 2006), while the patent box approach might complement or displace extant tax expenditures, such as the SR&ED credit. On this view, our proposal does not seek to reverse the current impetus of tax policy, but to redirect and improve on it.

> *A preferential tax rate for patent or innovation box income would contribute to an international "race to the bottom" in taxing income derived from IP.*

The concept of a race to the bottom in corporate income tax policy is much discussed in the tax competition literature. The concern is not necessarily relevant, however, to analyses of cross-border taxation of IP royalty or licensing flows that take foreign jurisdictions' tax policies as given. In the latter case, incremental tax revenue associated with taxing domestic activity at a preferential tax rate might exceed tax forgone, given that no related taxable activity otherwise would have taken place in Canada.

Conclusion

A serious case is to be made for extending preferential tax treatment to income derived from activities related to the development, commercialization, and adoption of intellectual property. The force of attraction is a powerful thing, and new ideas and their development and use tend to attract more of the same, with spillover benefits for their surroundings. With this in mind, we seek to foster Canadian businesses' pursuit of innovative development, commercialization, and adoption, to advance Canada's economic interests generally, relying on firms to respond to resulting market opportunities.

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