

Unclassified

DAF/COMP/WP2(2013)11

Organisation de Coopération et de Développement Économiques  
Organisation for Economic Co-operation and Development

18-Sep-2013

English - Or. English

**DIRECTORATE FOR FINANCIAL AND ENTERPRISE AFFAIRS  
COMPETITION COMMITTEE**

## **Working Party No. 2 on Competition and Regulation**

### **FACTSHEET ON COMPETITION AND GROWTH**

- Note by the Secretariat -

28 October 2013

*The document is submitted to Working Party No. 2 of the Competition Committee FOR DISCUSSION under item IV of the agenda at its forthcoming meeting on 28 October 2013.*

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**JT03344569**

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## FACTSHEET ON COMPETITION AND GROWTH

The Competition Committee asked for an annotated factsheet on the evidence relating competition, and competition policy, to macroeconomic outcomes, such as growth. Some authorities have found that their stakeholders in government frequently request evidence on such links, particularly in times of economic crisis. This is part of the Committee's strategic focus on evaluating the impact of competition policy.

This document is a first draft of such a factsheet, compiled by the Secretariat. It does not contain any new research but is instead essentially a literature review. We wrote it with the aim in mind of providing delegates (or anyone else) with material for a slide presentation on the topic.

It has two sections. Firstly, we provide a two page "narrative" of statements about the effects of competition and competition policy. Secondly, we break down this narrative into its component paragraphs, presenting the evidence for each of the statements. Throughout, we have tried to provide a very brief explanation of the supporting evidence. In general, we do not appeal to authority by saying "Porter says competition is good for growth", but provide two or three sentences explaining how Porter and colleagues found that successful exporters from Japan were those that faced strong domestic competition. Similarly, we often provide very short quotes from the papers we cite, again in the hope they would be useful in a PowerPoint presentation.

There is a longer discussion of Cole and Ohanian's work examining the effects of exemptions from competition law in the USA in the Great Depression. This is because the topic is particularly important, as the paper has often been cited in defence of competition law enforcement in times of recession. It is a useful paper, but it is also important to understand that its most dramatic conclusion – that the suspension of antitrust laws delayed recovery by seven years – is (a) mainly the result of rigid wage deals for which businesses were allowed cartels as a *quid pro quo*, rather than of the cartels themselves, and (b) very controversial indeed among macroeconomists. That said, its qualitative conclusion does fit the general conclusions of the literature on this episode in American economic history, so it remains valid.

This is an example of a broader point: where evidence is weak, or has significant risks, we want to draw attention to this, to help users of this material not to place too much weight on evidence that is not robust. We have tried only to cite evidence that is reasonably well-established and widely based. People using this material should feel confident that if we cite a paper showing a result, it is not a one-off exception to a much larger literature showing the opposite. That said, we are not trying to provide a complete overview of the literature, including all negative results and counter-arguments. We welcome views on whether we have got this balance right.

We welcome comments on the scope, content and presentation of the factsheet. We see this as a first draft, and expect the final version to be considerably improved by comments and additions suggested by expert Working Party delegates. In particular, too many of the papers cited here are based upon analysis of the United Kingdom, and too many are merely working papers, as opposed to peer-reviewed publications. Help in remedying these weaknesses would be appreciated. The presentation format also matters. In a final version online, the evidence could be hyperlinked to the narrative, but we think the printed version is still not easy to use and we welcome ideas on this.

## 1: Narrative

When customers can choose between different providers, they benefit and so does the economy as a whole. Their ability to choose forces firms to compete with one another. Choice for customers is a good thing in itself, but the competition between firms also leads to increased productivity and economic growth.

It can be hard directly to measure the effect of – for example – competition law on economic growth. But there is solid evidence in support of each of the relationships shown below.



Most importantly, it is clear that firms facing more competition experience faster productivity growth. This has been confirmed in a wide variety of empirical studies, on an industry-by-industry or even firm-by-firm basis. Some studies seek to explain differences in productivity growth between industries using measures of the intensity of competition they face. Others look at the effects of specific pro-competitive interventions, particularly trade liberalisation or the introduction of competition into a previously regulated, monopoly sector (such as electricity). This finding is not confined to “Western” economies, but emerges as well from studies of the Japanese and South Korean experiences, as well as from developing countries.

The main reason seems to be that competition allows more efficient firms to enter and gain market share, at the expense of less efficient firms. Regulations or anti-competitive behaviour preventing entry and expansion may therefore be particularly damaging for economic growth. Firms facing competition also seem to be better managed.

There is also evidence that intervening to promote competition will increase innovation. Firms facing competitive rivals innovate more than monopolies (although *after* such competition a firm may of course end up with a monopoly through a patent). The relationship is not simple: it is possible that moderately competitive markets innovate the most, with both monopoly and highly competitive markets showing weaker innovation. However, as competition policy does not focus on making moderately competitive markets hyper-competitive, but rather on introducing or strengthening competition in markets where it does not work well, this would still imply that most competition policies serve to promote innovation.

Because more competitive markets result in higher productivity growth, policies that lead to markets operating more competitively, such as enforcement of competition law and removal of regulations that hinder competition, will result in faster economic growth.

Some studies have also directly tried to relate pro-competitive policies such as competition law or deregulation to the level of economic growth of the national economy. Disentangling the effects of these policies from all the other factors affecting growth is hard, but these studies confirm the positive relationship between competition policy and growth.

### ***What about short term restrictions to preserve jobs and promote recovery in a recession?***

In general, insulating firms from international or domestic competition is a poor policy response to a downturn. The history of the United States provides the clearest example of this, in that the established anti-trust laws were selectively suspended in the early 1930s. A particularly influential study argues that this measure alone delayed economic recovery in the US for seven years. Other economists dispute this specific finding, but there is general agreement among scholars that the suspension of antitrust laws was an error, that delayed and hampered recovery.

### ***But growth is not everything?***

There are policy objectives other than GDP growth, and the OECD has been a vigorous champion of measuring such objectives more rigorously, and taking them better into account when formulating policy.

The effect of competition on *inequality* has been little studied, and is often assumed to be malign as competition creates winners and losers. However, restricting competition causes harm to the many, while the profits generally go to the few. The poorest in society are often the worst affected by higher prices or lower quality and choice resulting from restrictions on competition.

Similarly, there is often a gap between reality and perceptions when *employment* concerns are prominent. It is true that the productivity gains caused by competition can result in layoffs, but this is no more likely to add to unemployment in aggregate than any other form of technical progress. Furthermore, restrictions on competition often reduce output and employment.

Finally, competition can be effective in promoting *non-economic goals*. For example, competition in the provision of healthcare can improve quality outcomes, and competition in reaching environmental goals can result in significant cost savings or improved compliance. Ultimately, competition is a policy tool. It sharpens the incentives of private companies to succeed. In “normal” markets, such success arises from providing customers with what they want, such as higher quality or lower prices. If Government can properly define the rules for ‘success’ (which is not always easy) in the provision of social goods, it can often take advantage of the power of competition.

**[Narrative ends]**

## 2: Annotations and evidence

*Most importantly, it is clear that firms facing more competition experience faster productivity growth. This has been confirmed in a wide variety of empirical studies, on an industry-by-industry or even firm-by-firm basis. Some studies seek to explain differences in productivity growth between industries using measures of the intensity of competition they face.*

This evidence is mainly found in detailed studies of specific industries, or of individual firms. As British economist Stephen Nickell says, in a paper (Nickell 1996) that has become the classic reference in this literature “Most important, I present evidence that competition, as measured by increased numbers of competitors or by lower levels of rents, is associated with a significantly higher rate of total factor productivity growth.” Nickell’s paper takes various industry-level measures of competition, and finds that higher competition is statistically significantly associated with faster productivity growth.

There are many other economic studies on the links between competition and productivity, which in many cases build upon and deepen Nickell’s work. For example, Disney, Haskell and Heden (2003) use data on 140,000 separate businesses. The authors conclude “Market competition significantly raises both the level and growth of productivity”. Blundell, Griffith and Van Reenen (1999) by examining a set of data on manufacturing firms in the UK also find a positive effect of product market competition on productivity growth. Januszewski (2002) reports similar findings for a survey of 500 German firms. Similarly Aghion et al (2004, 2009) exploit micro-level productivity growth firm level and patent panel data for the UK and the wave of reforms that in the 1980s introduced greater competition in the economy and found that entry from foreign firms has led to greater innovation and faster total factor productivity growth of domestic incumbents, and thus to faster aggregate productivity growth.

Nickell suggested that product market competition works to increase productivity in part because it increases managers’ incentives to work hard in shareholders’ interests, a suggestion tested empirically for the UK and Germany by Koke and Renneboog (2005): “We find strong evidence that corporate governance and product market competition affect productivity growth, but the results differ substantially between Germany and the UK. The role of controlling blockholders and of bank creditors is particularly important in poorly performing firms.”

A large-scale survey of this literature can be found in OECD working paper 317: Ahn (2002), who concludes: “A large number of empirical studies confirm that the link between product market competition and productivity growth is positive and robust. [...] Empirical findings from various kinds of policy changes [...] also confirm that competition brings about productivity gains, consumers’ welfare gains and long-run economic growth.”

The analysis is not always straightforward, because there is not a single, right way of measuring competition. Many studies use measures related to the structure of markets, such as the number of firms competing, market shares, or the height of barriers to entry. However, in some cases, markets can be highly competitive even with only a few firms in them, if those firms happen to compete vigorously (for example because customers see little difference between their products). So other studies use alternative measures of competition based on the profitability of the firms such as the price-cost margin (Lerner index). This can be problematic too: profits are hard to measure and compare between firms meaningfully, and high profits can arise for reasons entirely separate from a lack of competition. One of the strengths of Nickell (1996) is that he uses several different measures of competition (and of productivity).

Some studies avoid the problem by using survey-based, subjective measures of competition. For example, Tang and Wang (2005) uses perceptions of competition in a sample of firms in Canada and find

that “firms – especially medium-sized ones – that perceive a higher degree of product market competition tend to have higher productivity levels.”

Economic historian Nicholas Crafts builds upon this productivity literature and develops an independent analysis to “highlight the role that competition in product markets, or the lack of it, played in British relative economic decline”, noting weak competition in the UK in the period of its economic decline relative to other European economies (roughly 1890 to 1980 but with a particular focus on the 1950s and 1960s), and improved performance and stronger competition thereafter. Crafts concludes “Productivity performance was clearly impaired when competition was reduced from the 1930s, and improved from the 1980s as a consequence of the return to stronger competition”. In addition to the well-known effects of competition on productivity, Crafts also identifies improved labour relations as an important driver of this effect<sup>1</sup>.

*Others look at the effects of specific pro-competitive interventions, particularly trade liberalisation or the introduction of competition into a previously regulated, monopoly sector (such as electricity).*

An alternative approach, that avoids measuring competition at all, is to examine the effects of policy changes that can be expected to have resulted in a rapid increase in competition (however measured), such as trade liberalisation and other structural reforms.

The trade literature is vast. In general, more openness to trade seems to be associated with faster growth, although the evidence is mixed and effects will arise from many factors other than product market competition. See Berg and Krueger (2003) for a survey. Focusing on competition, Griffith, Harrison and Simpson (2006) uses the introduction of the EU Single Market programme as an instrument to model the effects of increased competition, concluding “We provide empirical evidence that the reforms carried out under the EU Single Market Programme (SMP) were associated with increased product market competition, as measured by a reduction in average profitability, and with a subsequent increase in innovation intensity and productivity growth for manufacturing sectors.”

Policies liberalising industries that were previously regulated monopolies (especially utilities) also provide clear natural experiments on the effects of competition, although if accompanied by privatisation, it is difficult to disentangle the effects of competition from that of ownership. For example, labour productivity has been found to double or triple in electricity generation (see Jamasb, Mota, Pollitt and Newbery (2004) for citations for the UK and developing countries, such as Chile and Argentina) but usually as a part of a wide-ranging reform of the whole sector. In the US, electricity industry structure and reform processes vary regionally, and Fabrizio (2004) uses this to disentangle the effects, finding that private generators facing competition had 20% higher productivity than publicly-owned utilities facing no competition, and 5% higher productivity than privately-owned generators facing no competition.

Other industries can also provide case studies. For example, Zitzewitz (2003) looks at the UK and US tobacco industries, finding that the US industry experienced slower productivity growth during 1890-1911, when it operated as a cartel, than the UK industry, but that its productivity accelerated after the breakup of the American Tobacco Trust.

For deregulation, Davies et al (2004) provides some illustrative cases, particularly noting significant price effects from deregulations that had the effect of introducing competition (for example, low cost airlines within Europe). [We welcome other sector-specific analysis of deregulatory reform that delegates might be able to suggest here.]

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<sup>1</sup> Suggestions from delegates for making this initial section less UK-focused would be welcome.

Taking an opposite approach, Hasken and Sadun (2009) look at an increase in regulation, finding that increased regulation of retailing in the UK from 1996 reduced total factor productivity growth in retailing by about 0.4% p.a. More generally, Cincera and Galgau (2005) find that tighter regulation that reduced entry in European markets raised mark-ups and lowered labour productivity growth.

*This finding is not confined to “Western” economies, but emerges as well from studies of the Japanese and South Korean experiences.*

A common piece of economic folklore is that rapid economic development in East Asian countries – first Japan, then for example South Korea and others, more recently China – occurred because governments sheltered their industries from competition. Studies of productivity growth in different industries demonstrate that this is not true.

In Japan, work by Michael Porter and others demonstrated that it was those industries exposed to international competition that experienced rapid productivity growth, while those that operated in protected domestic markets stagnated. For example Sakakibara and Porter (2001) conclude that “These findings support the view that local competition – not monopoly, collusion, or a sheltered home market – pressures dynamic improvement that leads to international competitiveness”. Porter, Porter, Takeuchi, and Sakakibara (2000) notes that over a 50-year period, cartels were almost never found in successful exporting industries in Japan, even though they were prevalent in the rest of the economy.

Porter and Sakakibara’s initial work in this area was published when Japan was seen unequivocally as an economic success. In Porter and Sakakibara (2004), they identify the protected segments of Japan’s economy as being responsible for its weaker economic performance from the 1990s on, for example stating “Japan's problem is rooted in microeconomics, in how companies compete and distortions to competition. These microeconomic structures reduce productivity, lower the return on new investment, drive companies offshore and artificially elevate local prices. A more flexible economy in which competition is truly open will increase productivity and create new business opportunities.” Fukao and Kwon (2006), discussed below, similarly find a lack of rivalry between firms responsible for the economic slowdown in Japan.

Other economists have confirmed the findings. See for example, Okada (2005): “I show that competition, as measured by lower level of industrial price-cost margin, enhances productivity growth, controlling for a broad range of industrial and firm-specific characteristics. Moreover, I suggest that market power, as measured by either individual firm's price-cost margin or market share, has negative impact on productivity level of R & D performing firms.” More generally, the link between product market competition and productivity has been demonstrated in Japan, using similar methodologies as the productivity studies cited above, for example in Funakoshi and Motohasi (2009), which uses a sample of 2400 Japanese firms and finds a negative relationship between concentration and productivity growth.

The results of Korean domestic reforms in response to the Asian financial crisis also seem to demonstrate the effects of increased competition. For example, Baek, Kim and Kwon (forthcoming[?]) note the acceleration of Korean productivity following the crisis, and policy responses including strengthening the competition regime. They conclude “With regard to the determinants of the TFP growth rate, the reinforcement of competition after the Asian financial crisis contributed to the TFP growth rate, justifying introduction of various institutions for fair competition during the crisis. When industries are classified into sub industries by technology intensity, it can be said that the TFP growth has been driven by high technology and medium-high technology, and in high technology industry, the reinforcement of competition during post-crisis period and R&D intensity affected the TFP growth rate positively and significantly.”

There is little equivalent analysis of China, although studies have noted that the economic success of China, being export-oriented, is based in those industries that face competition in global markets.

*...as well as from developing countries.*

Studies of Latin America have suggested that restrictions on competition – particularly restrictions imposed by government – are a key constraint on growth in those developing economies. Cole et al (2005) conclude “We argue that competitive barriers are a promising channel for understanding low Latin TFP. We document that Latin America has many more international and domestic competitive barriers than do Western and successful East Asian countries. We also document a number of microeconomic cases in Latin America in which large reductions in competitive barriers increase Latin American productivity to Western levels.”

In contrast, in some Latin American countries, liberalisation has produced significant economic gains (see Pavcnik (2002) for a study of Chile’s reforms in the 1970s and 1980s), confirming that the role of competition in promoting productivity growth is not limited to the most advanced economies.

There is a rapidly increasing literature studying the effects of increased market openness in India. For example, Aghion, Burgess, Redding, and Zilibotti (2003) find positive effects of liberalization on economic performance across manufacturing sectors and states in India over the last decade.

A recent study on South Africa (Aghion et al. 2008) show that mark-ups on prices, which are used as a measure of competition, are higher in South African manufacturing industries than they are in corresponding industries worldwide; and that competition policy (i.e. a reduction of mark-ups) should have largely positive effects on total factor productivity growth in South Africa (in particular, a 10% reduction in SA mark-ups would increase productivity growth by 2 to 2.5% per year).

That does not mean that the poorest countries should necessarily emphasise competition policy over other economic reforms. In the poorest countries, any economic reform that results in workers moving from essentially zero-productivity subsistence farming into productive work can cause large increases in output. It is no surprise that emerging economies – some of them with weak competition policy – experience faster growth than economies with ten times their levels of per-capita income.

Furthermore, exports will almost invariably be exposed to strong competition in world markets, so even an economy with policies that restrict competition in its domestic markets could experience the benefits of competitive pressures in exporting sectors. But there is little evidence that such restrictions will help its development. On the contrary, if production aimed at domestic consumers faces no competition, domestic consumers will lose out and growth and development is likely to be unbalanced.

The links between competition and economic development, broadly defined (for example as an increase in human capability), remain under-researched. But it seems reasonable to conclude that competition in the poorest countries can produce big gains for consumers – including the poorest consumers for whom even a small improvement in cash terms can represent a big increase in living standards. Competition policy can aid development, both through its direct effects on growth but also because less competitive markets and government restrictions can create opportunities for corruption. The point is obvious perhaps, but a cross-country study of the effects of competition law (Voigt, 2009) finds a strong negative relationship between competition policy and corruption, even after including other measures of economic development as explanatory variable.

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*expansion may therefore be particularly damaging for economic growth. Firms facing competition also seem to be better managed.*

These studies demonstrate an empirical link between competition and productivity growth, but the confidence we can have in this finding is reinforced by empirical evidence on the detailed mechanisms. *Why* does competition result in faster productivity growth?

As noted earlier, Nickell (1996) suggested that product market competition worked to discipline managers, when shareholder control was weak (by noting that the productivity-enhancing effects of competition were greater for companies in which shareholdings were dispersed, compared to firms owned and managed by an individual). More recently, Van Reenen and colleagues have been particularly active in examining links between product market competition and quality of management. In several papers (see for example Bloom and Van Reenen (2007)) these authors have demonstrated that differences in productivity between countries depend on differences in management quality (measured through a survey), and in particular on how many *badly* managed firms there are. Countries with low productivity growth often have a long ‘tail’ of very badly managed firms at the bottom of the distribution (as opposed to being worse all across the distribution). It seems plausible that product market competition helps eliminate this ‘tail’, either through firm exit or through the disciplining effects of competition on managers. Bloom and Van Reenen (2007) conclude “We find that poor management practices are more prevalent when product market competition is weak and/or when family-owned firms pass management control down to the eldest sons (primogeniture).”

More generally, if new entry (or the growth of smaller rivals) is particularly important in determining overall productivity growth, then it is reasonable to conclude that pro-competition policies (especially those breaking down entry barriers or law enforcement to deter foreclosure) will promote faster productivity growth. There is indeed strong evidence that new entrants are often more efficient than firms exiting the market. For example, Harris and Li (2007) find for the UK that 79% of UK productivity growth arises from between-firm effects (ie displacement of less efficient firms by more efficient rivals) rather than within-firm effects (individual firms improving). Similarly, Hahn (2000) finds 45-65% of productivity growth in Korean industry arising from entry and exit. Fukao and Kwon (2006) explain reduced productivity growth in Japan in the “lost decade” by a reduction in the degree to which market shares reallocate from less productive firms to more productive ones, concluding “We also found that the metabolism—the expansion of employment and output by high-TFP firms and the contraction or exit of low-TFP firms—is not working well in Japan’s manufacturing sector.” The finding that productivity growth is largely driven by reallocation from less to more productive forms is discussed at length in Arnold et al (2011), in the context of the effect of anti-competitive regulation.

Another mechanism by which competition might promote growth is by increasing innovation. This is a large and complex topic, deserving a separate section.

*There is also evidence that interning to promote competition will also increase innovation. Firms facing competitive rivals innovate more than monopolies.*

Links between competition and innovation (whether of new products or novel cost reductions for existing production) have been much debated, at least since Schumpeter (1942) who argued that larger, market-leading firms were more likely to innovate.

Much of this recent analysis, particularly associated with Aghion, Bloom, Blundell, Griffith and Howitt (see for example Aghion et al 2005) has restored Scherer’s (1967) conception of the relationship as an ‘inverted U’: that moderately competitive markets are likely to be the most innovative, while monopoly or very competitive markets innovate less. Aghion et al typically use profitability (the Lerner Index) as a

measure of competition (and patents as the measure of innovation), so “very competitive” should be understood to mean industries with a low cost price margin. The empirical finding that the rate of innovation rises, peaks, then falls as industries become more competitive can presumably be understood as the effect of two – or more – opposing effects, operating at different strengths at different degrees of competition intensity. This might be because, for example, monopolists have weak incentives to innovate because they face no competitive pressure to do so, while in highly competitive industries, the gains from innovation will be rapidly competed away. Aghion et al prefer to characterise the result as a difference between “neck and neck” firms, at the technological frontier, for whom competition spurs innovation, and “laggards” for whom it does not.

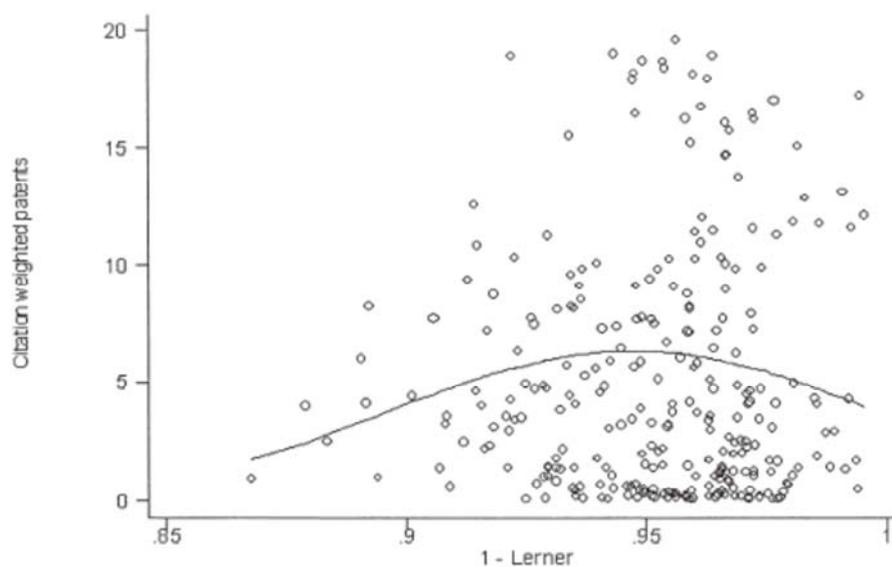


FIGURE I

Scatter Plot of Innovation on Competition

The figure plots a measure of competition on the  $x$ -axis against citation-weighted patents on the  $y$ -axis. Each point represents an industry-year. The scatter shows all data points that lie in between the tenth and ninetieth deciles in the citation-weighted patents distribution. The exponential quadratic curve that is overlaid is reported in column (2) of Table I.

Source: Aghion et al (2005)

However, as noted in the main text, the finding that very highly competitive industries might have low incentives to innovate is not of great importance for competition policy. Agencies enforcing the law, or governments imposing structural changes on industries to promote competition, are rarely intervening to make competitive industries hyper-competitive. More usually such policy change involves creating a competitive market out of monopoly, or at least out of a tight oligopoly (or, for competition agencies, normally resisting moves in the other direction, such as a merger that will result in a substantial lessening of competition). Competition interventions can be expected with some confidence to be on the “upward” part of the curve, where increases in competition are associated with increased incentives for innovation.

A similar finding, using data from transition economies in Central and Eastern Europe (Carlin et al 2004), makes the same point in its title: “A minimum of rivalry”. This study uses a count of competitors rather than the profit margins typically used by Aghion et al, and finds “evidence of the importance of a

minimum of rivalry in both innovation and growth: the presence of at least a few competitors is effective both directly and through improving the efficiency with which the rents from market power in product markets are utilised to undertake innovation.”

Just as was the case in the productivity literature, the effect of “shocks” can also provide vivid evidence of the effect of competition on innovation. Bloom, Draca and van Reenen (2011) study the effects of Chinese import competition on a panel of up to half a million firms over 1996-2007 across twelve European countries.

They conclude that “Chinese import competition (1) led to increased technical change within firms; and (2) reallocated employment between firms towards more technologically advanced firms. These within and between effects were about equal in magnitude, and appear to account for 15% of European technology upgrading over 2000-07”.

*Because more competitive markets result in higher productivity growth, policies that lead to markets operating more competitively, such as enforcement of competition law and removal of regulations that hinder competition, will result in faster economic growth.*

Competition policy interventions rarely target productivity growth directly, instead focusing on promoting or preserving competition itself, often measured by lower prices or other consumer benefits. The evidence discussed above strongly suggests, however, that in doing so, successful policy interventions to promote competition contribute to productivity growth and therefore to economic growth overall. If – for example – competition law enforcement is effective “in its own terms”, in making markets more competitive, then the productivity literature suggests it will also promote economic growth.

As the focus of this document is on ‘macro’ outcomes, it is not the place to review the literature on the effectiveness of competition law enforcement and other pro-competition policies. However, we provide a few references.

The best evidence for the effectiveness of competition law enforcement is at the same level as that enforcement itself: specific case-by-case outcomes. Competition authorities and academics have now published a large number of ex post studies of the results of enforcement actions, which were surveyed in OECD (2013). The studies illustrate the importance of protecting competition through enforcement of the law (although some find ineffective enforcement, as is only appropriate in an exercise that seeks to improve effectiveness)<sup>2</sup>.

There are meta-studies which have sought to estimate the effectiveness of action across many cases and even many jurisdictions. A critical article about US antitrust enforcement by Crandall and Winston (2003), led to discussion and rebuttal articles, notably Baker (2003) who illustrates the effectiveness of competition law enforcement, both by considering successes and by presenting four periods in which US antitrust enforcement was weak, at least for some sectors. For example, many export cartels – exempted for antitrust enforcement – persisted for up to 15 years<sup>3</sup>. Baker also discusses quantifying the benefits of antitrust enforcement, a task attempted by Huschelrath (2008) in a paper appropriately titled “Is it worth all the trouble? The costs and benefits of antitrust enforcement”. Huschelrath’s findings indicate rather

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<sup>2</sup> These studies will not be summarised here, but the OECD’s Competition Committee has decided to produce a manual of best practice in ex-post case reviews, which will include details of some of the best examples. The manual will be published in late 2014 or early 2015.

<sup>3</sup> Baker also discusses the suspension of antitrust laws in the Great Depression, discussed here below, under policy responses to recession.

marginal benefits, but he acknowledges that the methodologies he uses take no account of the deterrent effects of enforcement (let alone the dynamic benefits that are the main focus of this factsheet).

This deterrent effects are likely to be substantial, although it is naturally difficult to find evidence of things that did not happen. However, there is at least evidence that deterrence occurs, especially for cartels. For example, Connor and Bolotova (2006, pp. 1133-1134), in a literature survey and meta-analysis of several hundred cartels across a large number of jurisdictions in the European Union, North America and Asia found that the stronger the competition regime, the lower the cartel overcharge. The findings are similar to those of the seminal study by Clarke and Evenett (2002), drawing out the differences in overcharges in a global vitamins cartel between countries with and without competition regimes, which found the benefits of the existence of a competition regime just in overcharges deterred on this one cartel, typically to be close to the administrative total cost of each country's competition regime for a year.

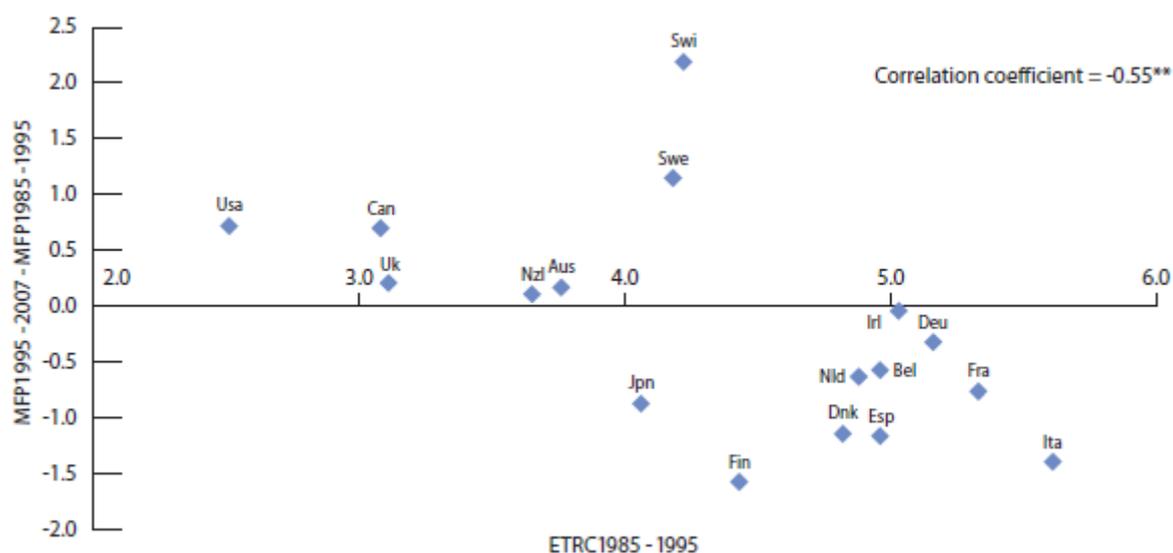
*Some studies have also directly tried to relate pro-competitive policies such as competition law or deregulation to the level of economic growth of the national economy. Disentangling the effects of these policies from all the other factors affecting growth is hard, but these studies confirm the positive relationship between competition policy and growth.*

At the level of an entire economy, it will be difficult to distinguish the effects of competition policies from other factors that affect growth, yet without such corrections, spurious correlations will arise. Most notably, in recent years high-income countries have grown significantly more slowly than emerging economies. High income economies also typically have well-developed competition regimes, but this does not imply that the regimes causes low growth. Rather, both the growth rate and the competition regime are correlated with the overall level of development. Analysis therefore needs either to correct for this feature, or compare only countries that are very similar. Nonetheless, there have been studies that attempt directly to measure the effect of competition policy in this way.

Buccirossi et al (2013) estimate the impact of competition policy on total factor productivity (TFP) growth for 22 industries in 12 OECD countries over 1995–2005. They find a positive and significant effect of competition policy as measured by a set of newly created indexes. They find that the effect is particularly marked for specific aspects of competition policy related to its institutional set up and antitrust activities and is strengthened by good legal systems, suggesting complementarities between competition policy and the efficiency of law enforcement institutions.

Dutz and Hairy (1999) find, using a cross-section of 52 countries, a positive link between measures of competition law effectiveness and GDP growth. Dutz and Vaglaisindi (2000) and Vaglaisindi (2006) using data on a number of transition economies shows that better implementation of competition law leads to greater competition (measured by number of players in the relevant industry). In contrast, Voigt (2009) calculates a set of indicators of the quality of competition policy and finds that they have no impact on total factor productivity.

The OECD – see for example Nicoletti (2003) has been an important source of evidence that product market deregulation can result in increased growth, for example by shifting resources from less efficient to more efficient providers, through the process of competition. The OECD's Product Market Regulation indices provide some evidence of this at national level. For example, Arnold, Nicoletti and Scarpetta (2011) note a statistically significant negative correlation between the level of product market regulation and the change in multi-factor productivity when comparing two time periods. The chart below illustrates this:

**Figure 2. Productivity acceleration and regulation**

The vertical axis shows the difference in multi-factor productivity growth (from the OECD database) comparing the period 1995-2007 with 1985-1995, and the horizontal axis shows the level of product market regulation as measured by the OECD's PMR index in selected sectors in 1985-1995. Source: Arnold et al (2011). The paper then discusses the reasons for this, noting in particular the effect of regulation on preventing efficient resource reallocation from inefficient to efficient companies.

Jaumotte and Pain (2005), again for the OECD, use panel regressions to investigate determinants of business R&D intensity and patenting for a sample of 20 OECD countries over the period 1982-2001. Product market competition, measured by the OECD's PMR indicators, is a significant positive contributor to R&D.

Ospina and Schiffbauer (2010), for the IMF, note that: "Using firm-level observations from the World Bank Enterprise Survey database, we find a positive and robust causal relationship between our proxies for competition and our measures of productivity. We also find that countries that implemented product-market reforms had a more pronounced increase in competition, and correspondingly, in productivity: the contribution to productivity growth due to competition spurred by product-market reforms is around 12-15%."

*In general, insulating firms from international or domestic competition is a poor policy response to a downturn. The history of the United States provides the clearest example of this, in that the established anti-trust laws were selectively suspended in the early 1930s.*

Just as recessions bring forth calls for trade protection, so they can bring calls for relaxation of competition laws. This could take the form of permitting anti-competitive mergers to go ahead, with the aim of preserving jobs at companies in danger of collapse or allowing anti-competitive behaviour that would in normal times be prohibited. Like trade protectionism, these measures often provide short term gains for a very visible and often vocal group of beneficiaries – such as workers at the affected firms – but impose much greater costs on a larger number of people, possibly over a long period of time. In general, insulating firms from international or domestic competition is a poor policy response to a downturn.

The history of the United States provides the clearest example of this, in that the established anti-trust laws were selectively suspended, under the National Industrial Recovery Act. Companies could be authorised to establish cartels, agreeing with competitors to fix prices, in exchange for agreement with unions to fix wages. The Act resulted in significant price increases, despite lasting for only two years before being declared unconstitutional. Romer (1999) notes that inflation in 1934 was almost 9%: an astonishingly high rate at a time when prices might be expected to decrease because of unemployment over 20%.

Cole and Ohanian (2004), in a particularly influential – but controversial – study argue that this measure alone delayed economic recovery in the US for seven years. This rather dramatic result depends more on the NIRA's effect of increasing wages, rather than its effect on product prices.

The study has caused vigorous debate in the macro-economics profession, because of its implications for the present economic crisis and has been attacked in strong language (for example by Paul Krugman<sup>4</sup>) but these criticisms are more for its dismissal of demand-side “Keynesian” explanations of the crisis and recovery, than its assessment of the effects of cartels. In effect, the controversy is the latest round in the long-running arguments between Keynesians and neo-classical economists, over whether wage rigidity is the primary cause of unemployment. The broader consensus of support for Cole and Ohanian's arguments about antitrust can be seen from the generally hostile assessment that Krugman reported in his blog, by FTC economist David Glasner<sup>5</sup>:

“Nevertheless, not everything Cole and Ohanian say is wrong. They properly criticize New Deal policies that slowed down the spectacular recovery from April to July 1933 to almost a crawl. What stopped April to July recovery almost in its tracks? The answer is almost certainly that FDR forced his misguided National Industrial Recovery Act through Congress in June, and by July its effects were beginning to be felt. Simultaneously forcing up nominal wages in the face of high unemployment (though unemployment started had falling rapidly when recovery started in April) and cartelizing large swaths of the American economy, the NRA effectively shut down the recovery that was still gaining momentum.”

Other studies of the Depression in the United States have tended to agree that the suspension of antitrust laws was an error, that delayed and hampered recovery. For example, Romer (1999) concludes that “This, the NIRA can be best thought of as a force holding back recovery, rather than as one actively depressing output.” Taylor (2002) finds “the NIRA cartel codes themselves brought a 10% reduction in manufacturing output” in early 1934. Taylor (2007) confirms this basic finding, with a more detailed assessment of which of seven provisions in cartel codes affected the output of 66 US industries before, during, and after the period when the NIRA was enforced.

*The effect of competition on inequality has been little studied, and is often assumed to be malign as competition creates winners and losers. However, restricting competition causes harm to the many, while the profits generally go to the few.*

When monopolies or restrictions on competition raise prices, they cause harm to ordinary people, including the poorest people. Many studies have noted that poorer people seem often to suffer disproportionately from the exercise of market power.

For example, Hausman and Sidak (2004) note that poorer and less educated customers pay more than better educated and more affluent customers, even controlling for the level of usage. The authors also noted that margins for the mobile telephony service being studied were rising, causing them to doubt the

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<sup>4</sup> <http://krugman.blogs.nytimes.com/2011/09/27/bad-faith-economic-history>

<sup>5</sup> <http://uneasymoney.com/2011/09/26/misrepresenting-the-recovery-from-the-great-depression/>

industry's claims that the market was highly competitive. In this industry, the authors expected that deregulation allowing entry of the "Regional Bells" into the long-distance market, would ameliorate this market power, benefiting the poor and less educated.

In a project with the OECD and the Federal Competition Commission in Mexico, Urzua (2009) studied the distributional effects of monopoly power. He reports that "the welfare losses due to the exercise of monopoly power are not only significant, but also regressive. Moreover, the losses are different for the urban and rural sectors, as well as for each of the states of Mexico, being the inhabitants of the poorest ones the most affected by firms with market power." Similarly, Creedy and Dixon (1998 and 1999) find that monopoly harms lower income groups more than higher, in studies of Australia and New Zealand.

Schivardi and Viviano (2011), surveying the literature on retail competition, noted "The available evidence for retail trade indicates that liberalisations are especially beneficial for low-income people: consumers enjoy lower prices (Griffith and Harmgart, 2008) and employment increases (Bertrand and Kramarz, 2002; Viviano, 2008). Despite this, free market policies are often opposed by a vast spectrum of political parties, including those more representative of low-income individuals (Alesina and Giavazzi, 2007)."

Effects at the other end of the income distribution – the rich - have been studied still less. However, Comanor and Smiley (1975) used simple estimates of the prevalence of monopoly profits, together with data on the heritability of wealth to suggest that, for example, more than half of the wealth of the richest 2.4% of households was ultimately derived from monopoly profits, through inheritance. Essentially, the study uses little more than guesswork (erring on the side of being conservative), but it seeks to make the point that the heritability of wealth implies that even quite small rents accruing to the rich from monopoly gains can profoundly affect wealth (and therefore income) inequality over a long enough period of time.

It would be interesting to study the effects of competition, or competition policy, on well-being measures such as the OECD's Better Life Index. Stucke (forthcoming) argues that competition policy can and should lead to an economy and society that is more effective at promoting well-being and happiness, noting "Other factors also suggest that an unconcentrated marketplace promotes wellbeing. A competitive market structure promotes economic opportunity and personal autonomy – a key predictor of well-being. [...] Thus, a competitive marketplace, in dispersing economic and political power, can foster activities which are correlated generally with healthier and happier people." However, as far as we are aware there are no empirical studies of this suggestion, as yet.

*Similarly, there is often a gap between reality and perceptions when employment concerns are prominent. It is true that the productivity gains caused by competition can result in layoffs, but this is no more likely to add to unemployment in aggregate than any other form of technical progress. Furthermore, restrictions on competition often reduce output and employment.*

Competition results in cost savings, and especially in innovation to find new ways of saving cost. This will often include reducing the size of the workforce. As noted above, the reform of previously regulated sectors to allow competition has often resulted in very large reductions in labour costs, particularly if accompanied by privatisation. For example, labour productivity in the UK electricity generation sector doubled following privatisation and the introduction of competition: output remained essentially the same but employment halved. Bloom et al's study of competitive effects of Chinese imports (cited earlier) found that employment fell in the sectors most affected.

However, these changes are no more likely to add to unemployment in aggregate than any other form of technical progress, or any other form of productivity growth. Technical advances in agriculture have led to employment falls of over 90% in the workforce employed per unit of output in that sector, in advanced

countries, but no one would seriously identify this as a cause of unemployment today. Restricting competition deliberately to preserve inefficiency to ‘protect jobs’ would be equivalent to deliberately suppressing new technologies for the same reason – a policy with obvious failings, especially in the long term.

The effect even of sudden increases in competition on employment can be quite complex. The retail sector provides an example: policies to restrict competition (such as land planning restrictions, or constraints on pricing) are often justified by reference to the need to preserve jobs in smaller retailers who would otherwise be replaced by less labour-intensive hypermarkets (the “Wal-Mart” effect). This can be studied by comparing employment in countries or regions with different regulations, or by looking at the effects of a superstore entering. As with many economic problems, it is important to look at all of the effects not only the immediate ones. A policy that saves one job will reduce employment if it somehow prevents 1.1 jobs from being created, as preserving inefficient means of production often will.

Bertrand and Krammarz (2001) found that zoning restrictions in France in the 1970s reduced employment in retail, concluding “Our findings indicate that retail employment could have been more than 10% higher today had entry regulation not been introduced. Promoting product market competition may thus be a key reform for countries with poor employment performance.” In the UK, Sadun (2008) concluded “Entry regulations against big-box retailers have been introduced in many countries to protect smaller independent stores. Using a new dataset from the UK, I show that in fact these entry regulations have been associated with greater employment declines in independent stores.” In Italy, Schivardi and Viviano (2011) study differences in entry regulations for retailers in different regions, and conclude “We find that barriers exert a strong influence on performance, increasing profit margins and prices, reducing productivity, ICT adoption, employment and increasing labour costs.”

As for “Wal-Mart” itself, the effect of its entering has been studied intensively. Clearly, it results in lower prices for consumers. But the effect on local employment is much more nuanced, with some studies finding positive and some negative effects, as local businesses adapt (or fail to) to entry. A balanced account by the Federal Reserve Bank of Minneapolis reviews this literature, and concludes “About the most that can be said about Wal-Mart's effect on jobs is that it is small – even by the standards of counties with modest populations – which itself might be a useful point, given the current rhetoric on both sides.”

*Finally, competition can be effective in promoting non-economic goals. For example, competition in the provision of healthcare can improve quality outcomes, and competition in reaching environmental goals can result in significant cost savings or improved compliance.*

It is now widely recognised that market-based mechanisms have an important role to play in finding efficient and effective solutions to some environmental problems.

The classic case, often cited in modern discussions of environmental problems, is the US Sulphur Dioxide Emissions Trading Programme, established in the 1990s. This is a system of tradeable permits that resulted in significantly lower-cost compliance with emissions targets (to reduce acid rain) than had been expected under the original regulatory scheme. Market prices for allowances rapidly reached levels about half of those expected, while compliance with the overall cap resulted in aggregate emissions being reduced as specified. See Schmalensee et al (1998) for an account. Competition is not essential in providing profit based incentives to reduce emissions (to a substantial degree, taxes and tradeable permits are equivalent in their effects) but such market-based systems have been shown to be effective. Like other markets – and especially markets designed to achieve public goals, much depends on the details of market design, and monopoly power can frustrate the goals of the programme (see OECD 2000, for example).

There is an increasing body of evidence that competition in the provision of healthcare can improve quality outcomes, such as survival rates. OECD (2011) presents evidence and experiences on the effects of introducing competition, following a roundtable discussion. Evidence from the US is mixed. Kessler and McClellan (2000) measure the impact of market concentration in the US on the quality of hospital services as measured by the risk-adjusted one year mortality rate from acute myocardial infarction (heart attack). Patients in the most concentrated markets had mortality probabilities 1.46 points higher than those in the least concentrated markets implying 2000 fewer (statistical) deaths in the least versus the most concentrated markets. However, not all studies support this finding (see for example Gowrisankaran and Town (2003)).

The UK provides a particularly interesting test case at the moment, as competition between hospitals is increasing rapidly, providing an exogenous competition shock (and also because health care outcomes in different regions are closely monitored and published). A finding arising from several studies is that quality of care seems to improve under competition when prices are fixed – presumably because additional managerial effort goes into quality provision.

For example, Cooper et al. (2011) found that after competition was introduced, the death rates for patients with heart attacks declined more rapidly in competitive areas. An increase in the number of hospitals in a market by 2 was associated with a 6.7% relative reduction in heart death rates. In a related study, Gaynor et al. (2010) also looked at the impact of competition on hospital death rates in England. They too found that hospitals facing greater competition lowered their heart attack mortality rates and overall mortality rates and found that the magnitude of the effect was nearly identical to that which was measured by Cooper et al.

Similarly, Bloom et al (2010) reports “we find that higher competition (as indicated by a greater number of neighboring hospitals) is positively correlated with increased management quality, and this relationship strengthens when we instrument the number of local hospitals with local political competition. Adding another rival hospital increases the index of management quality by one third of a standard deviation and leads to a 10.7% reduction in heart-attack mortality rates.”

This is not to say that the provision of such social products should be ‘left to the market’. There are many ways of organising activity that lie between the extremes of “state monopoly” and “free market”. But competitive processes can help in some cases, especially if the state through regulation carefully defines the boundaries and perhaps even the objectives of competition.

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