When do Countries Introduce Competition Policy?

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Abstract

This paper first presents stylised evidence showing how the date of the introduction of competition policy is correlated with country size. Smaller countries tend to adopt competition policy later. We thereafter present a simple theoretical model with countries of different size and firms competing à la Cournot. The predictions of the model are consistent with the empirical regularity presented. An implication of our model is that globalisation may give very different incentives regarding competition policy for small and large developing countries.

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1 Introduction

Competition policy is by now prevalent and important in most industrialised countries, and is being adopted in developing countries and in recent market economies (see Basedow, 2004). An interesting example is the "Draft Anti-Monopoly Law" that has been submitted to China's State Council (Mason & Hou Jiangxiao, 2004). It is notable that anti-trust legislation has been introduced at very different points in time in countries at similar levels of industrialisation. The US passed its first anti-trust law as early as 1890, and other countries followed during the 20th century, although with significant lags. For instance, the first British competition

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law was passed in 1948, and France and Germany followed in 1953 and 1957 (see Neumann, 2001). A number of countries, like Italy, New Zealand and Switzerland, did not adopt national competition laws until the 1980s and 1990s.

The question we ask in this paper is why countries at roughly the same levels of industrial development may find it in their interest to introduce national anti-trust regulations at different points in time. The hypothesis investigated is that this may derive from the simple fact that countries differ in size, and that they are therefore affected in different ways by the increased international trade that follows from reduced trade costs. The paper presents a simple Cournot model showing how globalisation will induce countries of different size to introduce competition policy. The predictions of the model are consistent with stylised facts presented.

There are a number of studies on competition policy in open economies. One strand of the literature focuses on issues related to harmonisation and decentralisation. For example, Barros & Cabral (1994) extends the analysis of Farrell & Shapiro (1990) by discussing optimal merger policies for open economies, assuming homogenous products and Cournot competition. Obviously, in open economies competition authorities ignore the effects of domestic mergers on foreign firms and consumers. Conditions are provided under which decentralised competition policy is as efficient as centralised competition policy. Head & Ries (2001) study the relationship between national and supra-national merger regulations in a Cournot framework. They conclude that in the absence of cost savings it will be in the national interest of competition authorities to block most mergers that reduce global welfare. This will not be the case however when the merger is associated with substantial cost savings.[1]

A number of papers aim at explaining the connection between optimal trade policy and various market characteristics. For example, Eaton & Grossman (1986) studies how optimal policy, in terms of taxes and subsidies, depends on the choice of strategic variable, prices or

[1] Bond (1997) has a similar objective as Head & Ries (2001). Centralised and decentralised competition authorities are compared within a customs union framework, where firms compete à la Cournot and local governments maximize weighted social welfare. The model is then applied to the early development of the competition policy of the US.

quantities. Export subsidies turn out often to be preferable under Cournot competition, while a tax tends to be a better policy under Bertrand competition. De Stefano & Rysman (2004) develop a strategic trade model based on Dixit (1979), with two countries exporting to a third country. The government chooses a tax policy, as well as the number of exporters and the number of product varieties produced. The main finding is that governments will always choose to group all products within a single firm, which seems intuitive considering that consumer welfare issues are disregarded. Both quantity setting firms and price setting firms are considered.

There are two studies that are closely related to our work, Dixit (1984) and Horn & Levinsohn (2001). Both analyse (among other things) the strategic effect of an increase in the number of firms in Cournot markets. In Dixit (1984) the point of departure is the view that foreign competition might make domestic competition policy redundant and that domestic mergers could become desirable from a social perspective. In a model with fragmented markets and zero trade costs and tariffs he finds that home country welfare decreases in the number of home country firms when imports are small relative to exports. Horn & Levinsohn (2001) discusses under what circumstances trade liberalisation will induce countries to use competition policy in a "beggar-thy-neighbour" fashion. The model is symmetric with two countries, homogenous products, segmented markets and zero trade costs. The governments choose the number of domestic firms as well as the levels of import and export subsidies/taxes. No clear-cut relationship between the levels of taxes/subsidies and optimal market structures is found.[2]

Our study considers national competition policies, but ignores issues related to harmonisation. In terms of methodology, we consider the case of Cournot competition with homogenous goods, and in this respect our study resembles previous studies. However, the time of introduction of competition policy in combination with asymmetries in country size is important in the question we ask. We analyse this by considering the effect of exogenous trade costs (e.g.

[2] A somewhat similar analysis, extended with a discussion of customs unions, is found in Richardson (1999). However, the focus in Richardson (1999) is on tariffs, while Horn & Levinsohn (2001) consider a more general class of policies.

transportation costs) that decrease over time, on countries of different size.[3] Thus we differ from the existing literature by focusing on the relation between optimal competition policy, country size and trade costs.

The paper is organised as follows. First, some stylised facts are presented. We then develop an oligopolistic trade model with trade costs and derive our main results. The final section concludes and discusses the policy implications of the results.

2 Stylised facts

The US introduced anti-trust legislation at a very early stage with the Sherman Act against monopolisation in 1890, and developed its policies with several other laws: the Clayton Act, which prohibits certain marketing practises and restricts mergers, and the Federal Trade Commission Act, both in 1914. In contrast, a country like Sweden had virtually no competition law before 1993; the precursor to its present competition authority, the *Swedish National Price and Cartel Board*, counted as one of its tasks the public registration of cartels, which were in practice legal (see Fölster & Peltzman, 1993).

A very basic difference between these two countries lies in the size of their respective markets. The question then arises whether these observations of a large country introducing competition policy earlier than a small country are indications of a more general pattern. To investigate this we compiled data on the year of the first competition law for the 24 "high-income" OECD countries, i.e., not including the six entrants since 1994, namely Korea, Poland, the Czech Republic, Hungary, Mexico and the Slovak Republic. The latter countries became market economies at a considerably later stage and would have been less prone to introduce competition policy before that time. The data on the year of introduction of competition policy is described in the Appendix. The year used is the year when an anti-trust law or competition law was introduced, even if enforcement of the law was very limited. The median year for the first anti-

[3] Baldwin et al. (2001) present some direct evidence of falling transportation and communication costs. Increasing trade shares also constitute strong indirect evidence. See e.g. O'Rouke and Williamson (1999).

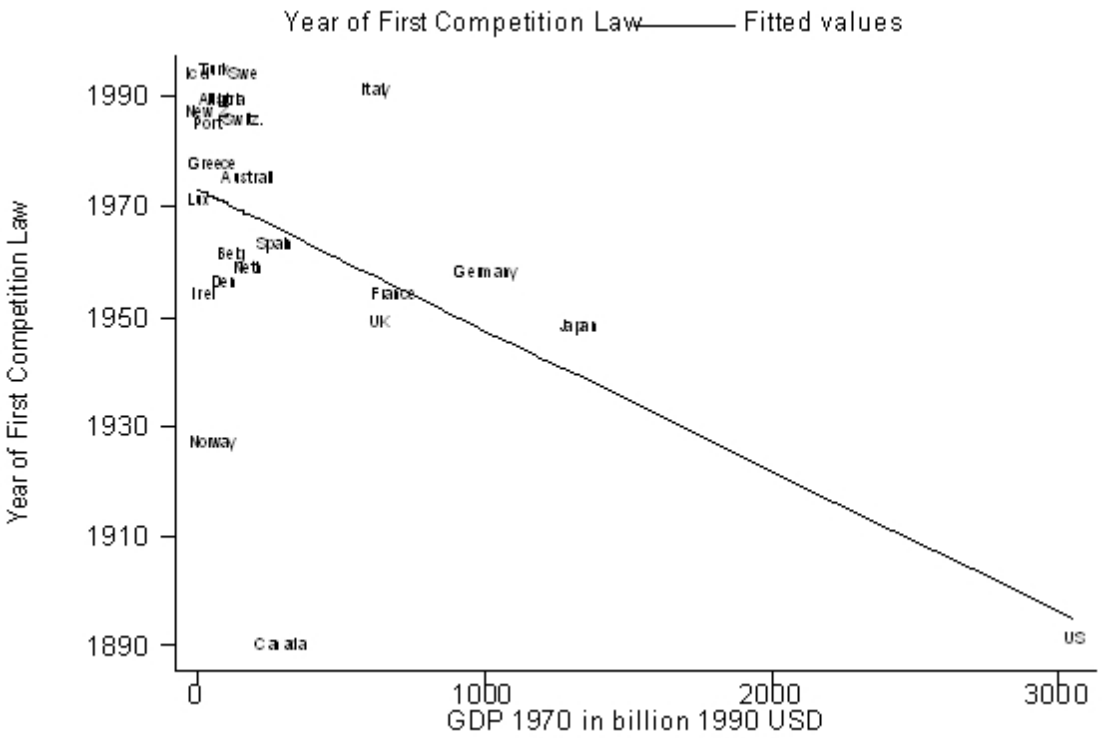

Figure 1: Year of first competition law and GDP in 1970 for 24 OECD countries

trust law among these countries is 1966. Figure 1 plots year of first competition law against GDP in 1970 for these countries.

A simple OLS regression of "Year of first competition policy" on "GDP in 1970" yields a significant and negative estimate (P-value 0.003). To investigate the robustness of the correlation, the regression was run with a number of broadly descriptive macroeconomic variables as control variables, and for the years 1970 and 1990. The control variables used are: Export share in GDP, GDP per capita and Share of government consumption in GDP, all variables for the same year. Using one particular year for the macroeconomic variables implies that it is the effect of each country's relative position that is investigated. In another 1990 regression, 1990b, data on corruption from the World Bank, and on Gini coefficients from the UN, from around 1990, are also added. None of the control variables is significant when included together with GDP. The results are shown in Table 1.[4]

[4] If only those countres that passed competition laws after 1945 are considered, the GDP effect is still significant, with a P-value of 0.015 for GDP in 1970.

Specification	1970a	1970b	1990a	1990b
GDP	-0.026*** (0.008)	-0.024** (0.01)	-0.017*** (0.005)	-0.017*** (0.005)
Export share		-0.123 (0.322)	-0.301 (0.279)	-0.205 (0.306)
GDP per cap.		-0.002 (0.007)	0.001 (0.001)	0.001 (0.001)
Gov. share.		-2.141 (1.591)	-2.270 (1.535)	-1.217 (1.990)
Corruption				-3.057 (3.459)
Gini				0.685 (1.483)
Number of obs.	24	24	24	23

Table 1: OLS regression of Year of first competition law on GDP and control variables[5]

The results are very much the same if GDP is replaced with the size of the population (not shown). The table and the figure show a clear correlation: smaller countries tend to be later in introducing competition policy. We next turn to a theoretical investigation of the mechanisms that may cause this.

3 A simple model

3.1 Basics

There are two countries, the home country (H) and the foreign country (F), and four firms. Firms 1 and 2 are located in H and firms 3 and 4 in F. Firms produce homogenous products and compete à la Cournot, in both markets. Markets are segmented so each firm chooses two quantities, one for the domestic market and one for the export market. The countries differ in size and country j has n^j identical inhabitants. The representative consumer in each country has the utility function

$$U^j = \alpha q^j - \frac{1}{2}(q^j)^2 + I, \tag{1}$$

q^j being the per capita quantity consumed in country $j \in \{H, F\}$. Hence, utility is quadratic in the traded good and linear in a composite good, I, which represents the part of the budget that is spent on other consumption. Let p^j denote the price of the traded good in country j,

[5]Standard errors in parentheses. *** denotes significance at the 1 per cent level and ** at the 5 per cent level. A Breusch-Pagan / Cook-Weisberg test for heteroskedasticity does not reject the hypothesis of constant variance for any of the regressions. See the Appendix for data sources.

and let m be the per capita income, which is equal across countries. Then obviously $I = m - p^j q^j$. Firm i's output in country j's market is given by Q_i^j i.e., $q^j = \frac{1}{n^j} \sum Q_i^j$. Straightforward utility maximixation leads to the following demand functions:

$$p^j = \alpha - q^j \tag{2}$$

The production technology is characterised by zero marginal cost but a positive fixed production cost, denoted by f. In addition, firms incur a per unit trade cost τ when exporting.

The objective of the government is to choose the competition policy that maximises domestic welfare, W^j, as measured by the sum of aggregate utility and domestic profits.[6] Note that these welfare components can be readily aggregated since the utility function is quasi-linear. Hence, denoting firm profits by π_i, domestic welfare in H equals $W^H = n^H U^H + \pi_1 + \pi_2$ while welfare in F is defined analogously. Firm i's profit is the sum of profits earned in the local market and profits earned in the export market. Consequently, for a firm k located in country H:

$$\pi_k = Q_k^H(\alpha - \frac{1}{n^H} \sum Q_i^H) + Q_k^F(\alpha - \frac{1}{n^F} \sum Q_i^F - \tau) - f, \quad k \in \{1, 2\}. \tag{3}$$

In analogy, if firm k was located in country F:

$$\pi_k = Q_k^H(\alpha - \frac{1}{n^H} \sum Q_i^H - \tau) + Q_k^F(\alpha - \frac{1}{n^F} \sum Q_i^F) - f, \quad k \in \{3, 4\}. \tag{4}$$

It is assumed that synergies in terms of fixed costs are such that if two firms collude or merge, the joint profit of the two colluding firms is always larger that the sum of profits without collusion.

3.2 Unilateral competition policy

In this section, we will show that large countries have a stronger incentive to start implementing competition policy than small countries. Hence, we ask under what conditions a country (here

[6] Most juridictions that apply a merger policy use a consumer welfare standard to evaluate mergers. A notable exception is Canada. However, when the issue at hand is whether or not a country should impose competition policy to begin with, we argue that the most relevant welfare measure is aggregate welfare.

country H) would unilaterally want to start preventing firms from colluding or start implemementing a strict merger policy. The point of departure is a world without competition or merger policy. We define competition policy, which is taken to be the same thing as anti-trust policy, as follows

DEFINITION 1 *When a country has a national competition policy, the firms located in the country will make independent decisions about quantities sold in both the domestic market and the export market.*

For simplicity, we do not explicitly take into account the administrative costs associated with the implementation of competition policy. We assume that when neither of the countries has a competition policy, firms 1 and 2 will collude or merge, as will firms 3 and 4. It is assumed that collusion across borders is not possible. Hence, in this scenario local firms collusively choose production quantities for the local market as well as for the export market, given the expected quantites produced by the foreign firms in these markets. Solving for the Nash equilibrium given these assumptions yields the following quantities:

$$Q_1^H = Q_2^H = \frac{n^H(\alpha + \tau)}{6} \tag{5}$$

$$Q_3^H = Q_4^H = \frac{n^H(\alpha - 2\tau)}{6} \tag{6}$$

$$Q_1^F = Q_2^F = \frac{n^F(\alpha - 2\tau)}{6} \tag{7}$$

$$Q_3^F = Q_4^F = \frac{n^F(\alpha + \tau)}{6} \tag{8}$$

which in turn implies that joint profits equal

$$\pi_1 + \pi_2 = \frac{n^H(\alpha + \tau)^2 + n^F(\alpha - 2\tau)^2}{9} - \sigma f, \tag{9}$$

where $\sigma < 2$ measures the strength of synergies in fixed costs. The consumer surplus is

$$U^H = m + \frac{(2\alpha - \tau)^2}{18}. \tag{10}$$

Hence, aggregate welfare becomes

$$W^H = \frac{n^H(\alpha + \tau)^2 + n^F(\alpha - 2\tau)^2}{9} - \sigma f + n^H m + \frac{n^H(2\alpha - \tau)^2}{18}, \tag{11}$$

where profit and consumer surplus are written separately to simplify welfare comparisons below.

The welfare in (11) may be compared to a situation when country H unilaterally introduces competition policy. If a competition policy is implemented in country H, Q_1^H and Q_2^H as well as Q_1^F and Q_2^F are chosen independently from each other. The corresponding Nash equilibrium implies the following set of quantities and welfare measures:

$$Q_1^H = Q_2^H = \frac{n^H(\alpha + \tau)}{4} \tag{12}$$

$$Q_3^H = Q_4^H = \frac{n^H(\alpha - 3\tau)}{8} \tag{13}$$

$$Q_1^F = Q_2^F = \frac{n^F(\alpha - 2\tau)}{4} \tag{14}$$

$$Q_3^F = Q_4^F = \frac{n^F(\alpha + 2\tau)}{8} \tag{15}$$

$$\widetilde{\pi}_1 + \widetilde{\pi}_2 = \frac{n^H(\alpha + \tau)^2 + n^F(\alpha - 2\tau)^2}{8} - 2f \tag{16}$$

$$\widetilde{U}^H = m + \frac{(3\alpha - \tau)^2}{32} \tag{17}$$

$$\widetilde{W}^H = \frac{n^H(\alpha + \tau)^2 + n^F(\alpha - 2\tau)^2}{8} - 2f + n^H m + \frac{n^H(3\alpha - \tau)^2}{32}. \tag{18}$$

Note from (6), (7), (13) and (14) that a necessary and sufficient condition for interior solutions in terms of quantities is $\tau \leq \frac{1}{3}\alpha \equiv \overline{\tau}$. For $\frac{1}{2}\alpha < \tau < \frac{1}{3}\alpha$ the foreign country will not sell in the domestic market after the home country has adopted a competition policy, and for $\tau \geq \frac{1}{2}\alpha$ there is no trade with or without competition policy. We henceforth assume $\tau \leq \overline{\tau}$.

Now, under the assumption that F does not adopt a competition policy, define Δ^H as the difference between aggregate welfare in H with and without competition policy:

$$\Delta^H \equiv \widetilde{W}^H - W^H = N\frac{s^H(\alpha+\tau)^2 + (1-s^H)(\alpha-2\tau)^2}{72} - f(2-\sigma) + N\frac{s^H\left(\alpha^2+2\alpha\tau-\tau^2\right)}{32}, \quad (19)$$

where $N \equiv n^H + n^F$, and $s^H \equiv \frac{n^H}{N}$. The first two terms of expression (19) measure the difference in profits, and the last term measures the difference in consumer surplus. This leads us to Propositions 1 and 2.

PROPOSITION 1 *Large countries have relatively stronger incentives to adopt a competition policy.*

Proof: The statement follows from the fact that for $\tau \leq \overline{\tau}$, $\frac{\partial \Delta^H}{\partial s^H} > 0$.

PROPOSITION 2 *The benefit of adopting a competition policy is increasing in τ for large countries. Specifically, for a country j, $\frac{\partial \Delta^H}{\partial \tau} > 0$, for all τ, if $s^j > 8/17$.*

Proof: From (19)

$$\frac{\partial^2 \Delta^H}{\partial s^H \partial \tau} = \frac{N}{144}(17\alpha - 19\tau) > 0 \quad \text{for} \quad \tau \leq \overline{\tau}$$

which implies that $\frac{\partial \Delta^H}{\partial \tau}$ increases monotonically in s^H. Next, the s^H that solves $\frac{\partial \Delta^H}{\partial \tau} = 0$ is given by

$$\frac{8\alpha - 16\tau}{17\alpha - 19\tau}.$$

The highest value of this expression for $\tau \in [0, \frac{\alpha}{3}]$ is given by $\frac{8}{17}$ for $\tau = 0$.

Since the number of firms is equal and constant in the two countries, the larger the domestic economy the more important the consumer surplus is in relative terms, which accounts for Proposition 1. By the same logic the value of competition policy must increase in the absolute size of the two countries (N). This is confirmed by (19).

Proposition 2 deals with the slope of Δ^H as trade costs (the level of integration) change. Differentiating Δ^H with respect to τ we have

$$\frac{\partial \Delta^H}{\partial \tau} = N\frac{s^H(\alpha+\tau) - 2(1-s^H)(\alpha-2\tau)}{36} + N\frac{s^H(\alpha-\tau)}{16}, \tag{20}$$

where the first term measures the profit effect and the second term measures the consumer surplus effect. The sign of the total effect turns out to hinge critically on the relative size of the two countries. Note that the effect of competition policy on overall profits is always negative, due to cost synergies. However, cost synergies do not depend on trade costs and the profit effect of competition policy may be increasing or decreasing in τ. A positive profit effect implies that variable profits increase (i.e., overall profits become less negative). For large s^H we have that Δ^H increases in the trade cost, implying that incentives to adopt competition policy are high at high trade costs, but for small s^H the opposite holds and the incentive to adopt a competition policy will be lower at high trade costs.

To understand the intuition for this result, note first that the Cournot model is characterised by a first mover advantage. Hence, firms that can commit to higher levels of output increase variable profits. One way to commit to higher output levels is to operate as two firms instead of one. In other words, two separate firms earn higher variable profits than one integrated (i.e., merged) firm.[7] Moreover, competition policy increases the number of independent firms by the same fraction in both markets, which means that sales increase by the same fraction in H and F. The effect can be seen by comparing (5) with (12) and (7) with (14). Finally, note from (9) and (16) that variable firm profits essentially depend on quantities squared. This means that the

[7] This means that mergers have to be motivated partly by efficiency gains. In this sense our framework is similar to e.g., Horn & Levinsohn (2001) and and most other studies in the field. In the absence of such gains firms in Cournot markets would disintegrate into a world of perfect competition.

variable profit will be convex in relative market shares. That is, a proportional increase in both quantities will be more valuable the more skewed the distribution of market size. Competition policy therefore has a stronger positive effect on variable profits for producers in a large country when trade costs are high, since this increases the relative size of the dominant home market. On the other hand, if H is small, most revenues are captured in the export market. As a consequence, the relative size of this larger market increases as trade costs are reduced. This means that for a small country the strategic gain from competition policy is largest at low trade costs.

In terms of per capita consumer welfare, the utility gain from competition policy is largest for high trade costs since then the competitive pressure is weak. To conclude, if H is large, firms and consumers will benefit most from competition policy, in terms of variable profits and aggregate utility, when trade costs are high.[8] If H is small, firms will gain most from competition policy, in terms of variable profits, when trade costs are low, while consumers will gain most when they are high. However, if H is small then s^H and thus the weight put on consumer utility is small, so the profit effect will dominate.

Figure 2 illustrates numerically Propositions 1 and 2 for $N = 12$, $\alpha = 1.5$, $f = 3$, and $\sigma = 1.62$. The curves show Δ^H for home countries of different size.

From Propositions 1 and 2 it follows that large countries, like the US, are likely to adopt competition policy when trade costs are high; that is, they are likely to be early adopters. This is especially so since there may be administrative or other costs involved when implementing competition policy, implying that Δ^H will need to exceed some minimum level before the country would consider introducing the policy.

The next question is what circumstances make it advantageous for smaller countries to follow the early example of larger countries.

[8] Note that we have restricted attention to levels of trade costs such that trade actually occurs. In the less interesting case where trade was prohibitively costly, mergers to monopoly would of course always be profitable.

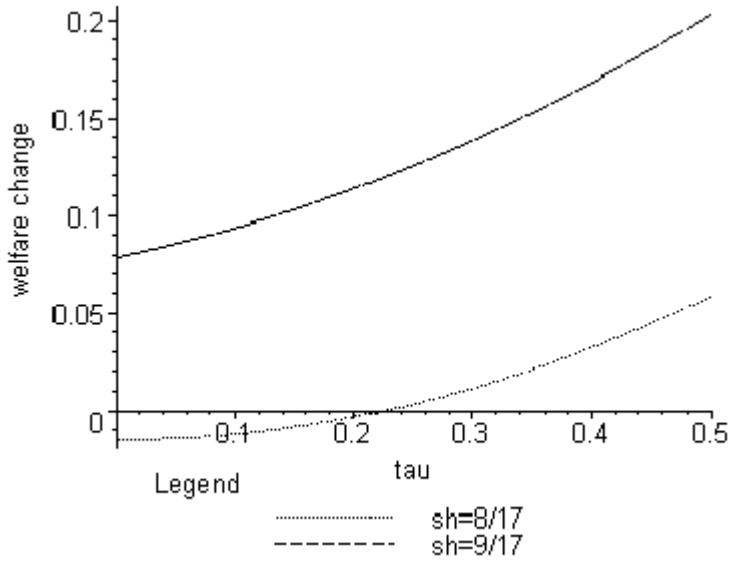

Figure 2: Gains from competition policy for different sizes of a large country H

3.3 Multilateral competition policy

Given that a large country H has adopted a competition policy, when will a smaller country F want to do the same? In order to answer this question we first calculate equilibrium quantities and welfare measures for the case when both countries have adopted competition policies. Then we calculate the welfare in F when only H has adopted a competition policy. Finally, the welfare gains for country F from introducing a competition policy are discussed.

When both countries have a national competition policy, output decisions are made independently. The corresponding Nash equilibrium implies the following set of quantities and welfare measures:

$$Q_1^H = Q_2^H = \frac{n^H(\alpha + 2\tau)}{5} \tag{21}$$

$$Q_3^H = Q_4^H = \frac{n^H(\alpha - 3\tau)}{5} \tag{22}$$

$$Q_1^F = Q_2^F = \frac{n^F(\alpha - 3\tau)}{5} \tag{23}$$

$$Q_3^F = Q_4^F = \frac{n^F(\alpha + 2\tau)}{5} \tag{24}$$

$$\widetilde{\pi}_3 + \widetilde{\pi}_4 = \frac{2\left[n^H(\alpha - 3\tau)^2 + n^F(\alpha + 2\tau)^2\right]}{25} - 2f \tag{25}$$

$$\widetilde{U}^F = m + \frac{2(2\alpha - \tau)^2}{25} \tag{26}$$

$$\widetilde{W}^F = \frac{2\left[n^H(\alpha - 3\tau)^2 + n^F(\alpha + 2\tau)^2\right]}{25} - 2f + \frac{2n^F(2\alpha - \tau)^2}{25} + n^F m. \tag{27}$$

If, on the other hand, country H adopts a competition policy while firms in F collude the corresponding Nash equilibrium quantities are given by (12), (13), (14), and (15) and profit and welfare measures in F are:

$$\pi_3 + \pi_4 = \frac{n^H(\alpha - 3\tau)^2 + n^F(\alpha + 2\tau)^2}{16} - \sigma f \tag{28}$$

$$U^F = m + \frac{(3\alpha - 2\tau)^2}{32} \tag{29}$$

$$W^F = \frac{n^H(\alpha - 3\tau)^2 + n^F(\alpha + 2\tau)^2}{16} - \sigma f + \frac{n^F(3\alpha - 2\tau)^2}{32} + n^F m. \tag{30}$$

Now, under the assumption that H adopts a competition policy, define Δ^F as the difference between aggregate welfare in F with and without competition policy.

$$\Delta^F \equiv \widetilde{W}^F - W^F = 7N\frac{\left(1 - s^F\right)(\alpha - 3\tau)^2 + s^F(\alpha + 2\tau)^2}{400} - f(2-\sigma) + N\frac{s^F\left(31\alpha^2 + 44\alpha\tau - 36\tau\right)}{800}, \tag{31}$$

where $s^F \equiv \frac{n^F}{N}$. The first two terms measure the difference in profits and the last term measures the difference in consumer surplus. This leads us to Proposition 3.

PROPOSITION 3 *A larger country has stronger incentives to follow the other country and adopt a competition policy.*

Proof: The statement follows from the fact that for $\tau \leq \overline{\tau}$, we have that $\frac{\partial \Delta^F}{\partial s^F} > 0$.

The intuition is again simply that a large country has more consumers and therefore cares more about the consumer surplus, which always increases as competition policy is introduced.

PROPOSITION 4 *The benefit of introducing competition policy, given that the other country has done so, falls as trade costs are reduced for relatively large countries* $\left(s^F > \frac{21}{46}\right)$. *For smaller countries reductions in trade costs will eventually favour the adoption of a competition policy. For even smaller countries* $\left(s^F < \frac{63}{223}\right)$ *the incentives to adopt a competition policy are maximal for* $\tau = 0$.

Proof: Note that Δ^F is convex in τ and that $\frac{\partial \Delta^F}{\partial \tau} > 0$ for $\tau = \overline{\tau}$. The first and second statements follow from the fact that $\frac{\partial \Delta^F}{\partial s^F} > 0$ for all s^F if and only if $s^F > \frac{21}{46}$. The second statement follows from the fact that $\Delta^F(0) > \Delta^F(\overline{\tau})$ for $s^F < \frac{63}{223}$.

The interpretation is similar as for Proposition 2. If country F is large relative to the export market, most profits are earned in the domestic market, and the total sales of domestic firms are higher at high trade costs. Competition policy increases the market shares of domestic firms, and this strategic gain is largest at high trade costs. On the other hand, if country F is small, most revenues are captured in the export market, and domestic firms grow as trade costs are reduced. This means that the strategic gain from competition policy is largest at small trade costs. In terms of per capita consumer welfare, the utility gain from competition policy is largest at large trade costs since then the competitive pressure is weak.

In sum, if country F is large, both firms and consumers will benefit most from competition policy, in terms of variable profits and aggregate utility, when trade costs are high. If country F is small its firms will gain most from competition policy, in terms of variable profits, when trade costs are low, while its consumers gain most at high trade costs. However, if the home

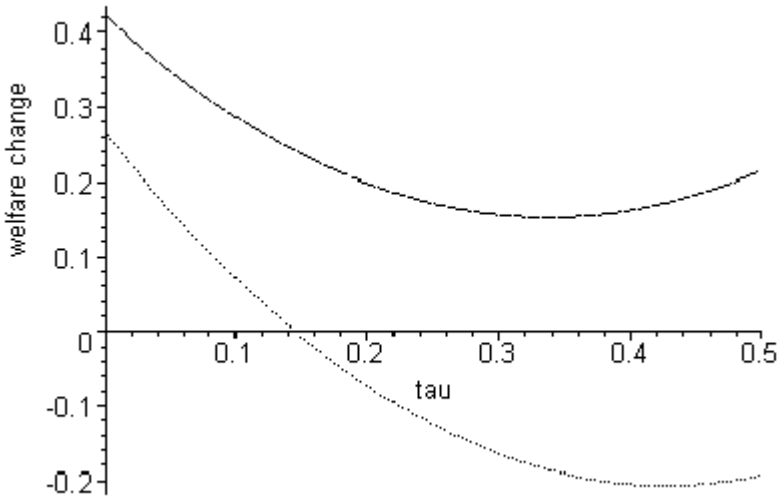

Figure 3: Gains from competition policy for different sizes of the small country F

country is small the weight put on consumer utility is small so the profit effect will dominate. Propositions 3 and 4 are illustrated in Figure 3 for $\alpha = 1.5$, $f = 3, \sigma = 1.8$ and $N = 18$. The curves show Δ^F for $s^F = 0.1$ (lowest dotted curve), and 0.25. The figure illustrates how small countries are likely to wait until economic integration has proceeded far enough before adopting a national competition policy.

The analysis, thus, shows how large countries are likely to be early adopters of competition policy, and how small countries may be expected to follow later when integration has proceeded far enough.

4 Concluding discussion

This paper presents stylised empirical evidence from OECD countries showing how small countries have historically been late in introducing competition policy. The negative correlation between the size of countries and the time before introducing competition policy is shown to be robust to the introduction of a number of control variables. We thereafter analyse a model with two countries of different size separated by trade costs where firms compete à la Cournot. The model illustrates how large countries have the strongest incentives to introduce competition

policy when trade costs are high, whereas small countries have incentives to follow only once trade costs have come down. Given that trade costs have fallen over the course of the 20th century, this is consistent with the observed empirical regularity.

The basic mechanism in the model is that competition policy forces domestic firms to set quantities independently, and thereby essentially gives them a first mover advantage compared to foreign firms. This advantage increases more than proportionally with market size. For firms in a large country the home market is of dominant importance, and since high trade costs reinforce this dominance they also increase the value of competition policy in terms of variable profits. For firms in a small country the foreign market is of dominant importance, and competition policy is therefore most valuable, in terms of variable profits, at low trade costs. Finally, the gain in consumer welfare from competition policy is largest at high trade costs in any country, since then the competitive pressure is weak. Hence, in a large country both consumers and firms would prefer to implement competition policy at high trade costs. This is not the case in small countries. However, since there are few consumers in a small country, firms' interests still dominate government policy even though we assume that governments weight profits and consumer surplus equally. This also implies that assuming that firms have a stronger influence than consumers, e.g. achieved through lobbying (see Grossman & Helpman (1994)) would probably not alter our results, and a "Competition policy for sale"-variant of our model would yield very similar results to the present version. In large countries firms have weak incentives to lobby against the implementation of competition policy when trade costs are high. For small countries the opposite relation holds.

Even though this paper attempts to explain the historical pattern of the introduction of competition policy, it has forward-looking implications. One implication of our model is that globalisation may give very different incentives regarding competition policy for small and large developing countries. Small countries are likely to favour adoption of competition policy once they are sufficiently integrated in the world trading system. For large countries, such as China and India, the situation may be different. Their incentives to implement competition policy may

be stronger at an early stage of integration. However, it is also possible that these fast-growing countries are in transit from being of small or medium relative market size to being large, and that they were relatively small when trade costs were high and are now becoming relatively large as trade costs have fallen. In such a case these countries may never find it in their interest to implement competition policy.

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5 Appendix

Data sources:

The information on the year of the first competition law is derived as far as possible from OECD country reports; these are available for all except Australia, Iceland, Luxembourg, Portugal, Sweden and Switzerland. For Australia the information is from Steinwall (1999), for Iceland, Luxembourg and Sweden from the respective competition authority home pages, for Portugal from Cuatrecasas and Gonçalves Pereira, Castelo Branco (2004), and for Switzerland from Neven & Von Ungern-Sternberg (1997).

For each country, the year sought has been the year when the first law that is identified as a competition law or anti-trust law, was passed. The years used are: Australia: 1974, Austria: 1988, Belgium: 1960, Canada: 1889, Denmark: 1955, Finland: 1988, France: 1953, Germany: 1957, Greece: 1977, Iceland: 1993, Ireland: 1953, Italy: 1990, Japan: 1947, Luxembourg: 1970, Netherlands: 1958, New Zealand: 1986, Norway: 1926, Portugal: 1984, Spain: 1962, Sweden: 1993, Switzerland: 1985, Turkey: 1994, UK: 1948, US: 1890

The data on GDP, Export share in GDP, GDP per capita and Share of government consumption in GDP, is from the United Nations National Accounts Main Aggregates Database, available at unstats.un.org. Gini coefficients (not available for Iceland) are for one year between 1987 and 1995, from the United Nations University WIDER World Income Inequality Database, available at www.wider.unu.edu. The corruption measure adds up six measures taken from Kaumann, Kraay & Mastruzzi (2003), of Voice and accountability, Political stability, Government effectiveness, Regulatory Quality, Rule of Law, and Control of corruption, from 1996.