

The impacts on the price-effect of competition of having an own product name, market age, and a reregulation

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Abstract: This document report the results from three extensions of the analyzes made in Granlund and Bergman (2017). First, the results show that generic products sold under their own product name respond less to competition than ordinary generics which are sold under the substance name, usually followed by the company name. Second, the results indicate that reregulation that took place in 2009 and 2010 strengthened the effect of number of competitors. Third, no significant difference in the long term effect of number of competitors is found between new and old markets.

1. The impact of having an own product name

The category Generics is divided by IMS Sweden into two subcategories, Ordinary Generic and Branded Generics. Ordinary Generics are sold under the substance name, usually followed by the company name, while Secondary Brands like brand-name drugs are sold under their own product name. To give an example, ordinary generics including the substance Bisoprolol, are sold under names such as Bisoprolol Ratiopharm, Bisoprolol Sandoz and Bisoprolol Stada, while the original and secondary brand are sold under the product names Emconcor and Bisomerck, respectively.

A firm selling a generic product can hence by choosing name of the product choose which of the two subcategories the product falls in. In the study-population, some products have by changing name changed subcategory. It is possible that whether it is better to have an own product name or an ordinary generic name depends on the number of generic competitor. Therefore, it is possible that the subcategory variable is endogenous, which is the reason why we have not separated between the two subcategories in the analyses in Granlund and Bergman (2017), but in Table 1 we compare the two categories.

For both the OLS and the IV specification, we see that the sum of the coefficients for the lags is 0.67-0.68 for both subcategories, i.e., the speed of the price adjustments is similar. However, products that currently have their own brand name respond less to competition in both the short- and long-term. Comparing with the results for originals in Table 2 in Granlund and Bergman (2017), it is clear that the competition effect for branded generics is much closer to that for ordinary generics than that for originals.

Table 1. Comparison ordinary generics and branded generics

	<i>Ordinary Generics</i>		<i>Branded Generics</i>	
	OLS 1	IV 1	OLS 1	IV 1
$\ln P_{i,t-1}$	0.506*** (0.015)	0.505*** (0.015)	0.528*** (0.039)	0.527*** (0.038)
$\ln P_{i,t-2}$	0.164*** (0.015)	0.164*** (0.015)	0.149*** (0.016)	0.147*** (0.016)
$\ln \text{GenFirms}_{e,t-1}$	-0.246*** (0.026)		-0.167*** (0.041)	
$\ln \text{GenFirms}_{e,t}$		-0.288*** (0.032)		-0.197*** (0.048)
$\frac{d \ln P_i^*}{d \ln \text{GenFirms}_e^*}$	-0.745*** (0.082)	-0.870*** (0.099)	-0.517*** (0.083)	-0.605*** (0.090)
Observations	100320	99913	21577	21011
R ²	0.449	0.448	0.469	0.467

Note: ***, **, * indicate that the coefficient is statistically significant different from zero on the 1%, 5% and 10% significance levels, respectively. The specifications include the same control variables as the corresponding specifications in Granlund and Bergman (2017).

2. The effect of the reregulation

In Table 2 we present results obtained by, in addition to the variables in the OLS 1 specification of Granlund and Bergman (2017), also including interaction between the key variables $\ln P_{i,t-1}$, $\ln P_{i,t-2}$, and $\ln \text{GenFirms}_{e,t-1}$, on the one hand, and indicators for the three major parts of the reregulation 2009-2010 on the other hand. The indicators are: 2009PriceCap_{it} (interactions with this ends with 09Cap); $\text{Oct}09_t$ taking the value one from October 2009 when it was clarified that the reference price should be the price of the cheapest exchangeable product available in Sweden, not at the individual pharmacy; and $\text{Feb}10_t$ taking the value one from February 2010 when the package size groups within which substitution should be made were defined clearer.

The results show that the sum of the coefficients for the lags of the dependent variables becomes slightly smaller after the reregulation. For generics it is 0.660 after February 2010 for observations where 2009PriceCap_{it} equals one, compared to 0.678 before the reregulation, but for originals the reduction is marginal, from 0.939 to 0.935. For generics, we see that the short-term effect of $\ln \text{GenFirms}_{e,t-1}$ becomes significantly stronger after February 2010. For originals on the other hand, none of the interaction coefficients are significantly different from zero.

At the bottom of Table 2 we report the long-term effect before the reregulation and the long-term effect after February 2010 for observations where 2009PriceCap_{it} equals one. These derivatives indicate that a given number of generic competitors result in lower prices after the reregulation than before. It should be noted that the interaction effects are identified not only in variation in number of competitors before and after the reregulation, but also by products facing the same number of competitors before and after the reregulation. Perhaps more importantly, it should be noted that the interaction effects with 2009PriceCap_{it} are mainly identified by the large majority of observations for which this variable took the value one already in July 2009. Firms had at most known about the price cap a few months before it came into effect and had thus small possibilities to react strategically to the new rules. For substances losing patent protection after July 2009, it is possible that generic firm avoid setting prices at less than 30% of the on-patent price. Thus, it is possible than an evaluation of the reregulation based on data using a longer time period after the reregulation would not indicate that the reregulation has increased the competition effects. In the dataset used for this study, we have 8544 observations of 38 difference substance losing patent after July 2009, but there is no indication of smaller effect of the price cap or number of competitors for these.

Table 2. Effects of the reregulation

	<i>Generics</i>	<i>Originals</i>
$\ln P_{i,t-1}$	0.488*** (0.021)	0.912*** (0.017)
$\ln P_{i,t-2}$	0.191*** (0.019)	0.027* (0.016)
$\ln P_{i,t-1} * 09Cap_{it}$	0.020 (0.022)	-0.006 (0.006)
$\ln P_{i,t-2} * 09Cap_{it}$	-0.046** (0.020)	0.004 (0.006)
$\ln P_{i,t-1} * Oct09_t$	0.043*** (0.015)	0.000 (0.003)
$\ln P_{i,t-2} * Oct09_t$	-0.047*** (0.015)	0.002 (0.002)
$\ln P_{i,t-1} * Feb10_t$	-0.024 (0.015)	-0.001 (0.002)
$\ln P_{i,t-2} * Feb10_t$	0.035*** (0.011)	-0.003 (0.002)
$\ln GenFirms_{e,t-1}$	-0.210*** (0.023)	-0.004 (0.003)
$\ln GenFirms_{e,t-1} * 09Cap_{it}$	-0.023 (0.016)	-0.004 (0.003)
$\ln GenFirms_{e,t-1} * Oct09_t$	0.002 (0.013)	-0.001 (0.003)
$\ln GenFirms_{e,t-1} * Feb10_t$	-0.038*** (0.013)	-0.003 (0.002)
$d \ln P_i^* / d \ln GenFirms_e^* 1$	-0.652*** (0.072)	-0.062 (0.054)
$d \ln P_i^* / d \ln GenFirms_e^* 2$	-0.792*** (0.074)	-0.177*** (0.050)
Observations	121895	32300
R ²	0.452	0.916

Note: $d \ln P_i^* / d \ln GenFirms_e^* 1$ is the long-term effect before the reregulation while $d \ln P_i^* / d \ln GenFirms_e^* 2$ is the long-term effect after February 2010 for observations where $2009PriceCap_{it}$ equals one. ***, **, * indicate that the coefficient is statistically significant different from zero on the 1%, 5% and 10% significance levels, respectively. Except for the interactions with the reform indicators, the specifications include the same control variables as OLS 1 in Granlund and Bergman (2017).

3. The effect of market age

In Table 3 we compare the competition effect and the speed of adjustment for substances that has recently lost patent protection with older substances. This is done by including interactions with the continuous variable $10years_{st}$, which equals $Months_Pat_{st}/120$ and with the indicator variable Old_{st} that takes the value one if $Months_Pat_{st} > 120$ and zero otherwise. The results indicate that the speed of adjustment is similar among new and old substances. Neither do we find and significant differences in the competition effects, but when using the interactions with the indicator variable Old_{st} the point estimate for the long-term effects is 8% and 6% larger in absolute size for generics and originals, respectively, for those where the patent expired (or generic competition began) more than 10 years ago, compared to those with a more recent patent expiration (or onset of generic competition).

Table 3. Old versus new substances

	<i>Generics</i>		<i>Originals</i>	
	Cont.	Indicator	Cont.	Indicator
$lnP_{i,t-1}$	0.509*** (0.021)	0.515*** (0.017)	0.905*** (0.019)	0.912*** (0.017)
$lnP_{i,t-2}$	0.160*** (0.020)	0.156*** (0.016)	0.035* (0.018)	0.030* (0.016)
$lnP_{i,t-1} * 10years_{st}$	-0.000 (0.006)		0.004* (0.002)	
$lnP_{i,t-2} * 10years_{st}$	0.002 (0.005)		-0.003 (0.002)	
$lnP_{i,t-1} * Old_{st}$		-0.010 (0.013)		-0.000 (0.001)
$lnP_{i,t-2} * Old_{st}$		0.013 (0.010)		0.000 (0.001)
$lnGenFirms_{e,t-1}$	-0.245*** (0.025)	-0.221*** (0.024)	-0.008** (0.004)	-0.007 (0.005)
$lnGenFirms_{e,t-1} * 10years_{st}$	0.004 (0.004)		0.000 (0.000)	
$lnGenFirms_{e,t-1} * Old_{st}$		-0.023 (0.023)		-0.003 (0.004)
$dlnP_i^* / dlnGenFirms_e^*$ if interaction = zero	-0.743*** (0.080)	-0.671*** (0.078)	-0.141** (0.049)	-0.117 (0.082)
$dlnP_i^* / dlnGenFirms_e^*$ if $10years_{st}=1$	-0.736*** (0.075)		-0.143** (0.066)	
$dlnP_i^* / dlnGenFirms_e^*$ if $Old_{st}=1$		-0.748*** (0.081)		-0.169*** (0.047)
Observations	121895	121895	32300	32300
R ²	0.450	0.450	0.916	0.916

Note: ***, **, * indicate that the coefficient is statistically significant different from zero on the 1%, 5% and 10% significance levels, respectively. Except for the interactions with $10years_{st}$ and Old_{st} , the specifications include the same control variables as OLS 1 in Granlund and Bergman (2017).

Reference

Granlund D and M A Bergman (2017) Price competition in pharmaceuticals – evidence from 1 303 Swedish markets, Umeå Economic Studies 952.