

## Relevant Market and Pricing Behavior of Regional Newspapers in the Netherlands\*

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**Summary:** The aim of this study is to investigate the effect of market structure and area characteristics on the subscription prices and advertising rates for regional newspapers in the Netherlands. The price-market structure analysis in this study shows that there exists a negative relationship between concentration and prices. The results also show that advertising rates, differently to subscription prices, are significantly influenced by regional income and particularly by population density in the specific area. Furthermore, the evidence indicates that the relevant market for regional newspapers in the Netherlands is a market which encompasses regional newspapers, national newspapers and other media sources.

**Zusammenfassung:** Ziel der vorliegenden Untersuchung ist es, den Einfluss von Marktstruktur und anderen regionalen Einflussgrößen auf die Preise der Zeitungen für Abonnements und Anzeigen zu analysieren. Im Ergebnis zeigt sich insbesondere eine negative Korrelation von Konzentration und Zeitungspreisen. Die Preise für Anzeigen hängen – anders als die für Abonnements – signifikant vom Einkommensniveau und der Bevölkerungsdichte in der jeweiligen Region ab. Weiterhin deutet die empirische Evidenz darauf hin, dass zu den relevanten Märkten für Regionalzeitungen in den Niederlanden auch die überregionalen Zeitungen und andere Medien gehören.

### 1 Introduction

Pricing behavior of newspapers has long been a subject of interest to industrial organization researchers, policy makers and other professionals related to the industry. They investigated the pricing behavior of newspapers under various market structure and competition. However, they do not agree on the effect of market structure and competition on the pricing behavior of newspapers (Albarran and Dimmick 1996). For instance, Chaudri (1995) and Van Kranenburg (2001) showed that reduction in competition did not lead to price increases that were detrimental to consumers. However, other studies found that competing newspapers had lower prices (Grotta 1971, Kerton 1973). Although these studies are inconclusive, they still contribute significantly to antitrust issues, in particular in the analysis for the ability to exercise market power. For this kind of investigations, antitrust authorities need to define the antitrust market in which a newspaper competes with its rivals. Moreover, the purpose of market definition in an antitrust analysis is to identify products that are important substitutes to those produced by the newspapers being investigated. Hence, defining the market includes both determining the product market, that is,

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which products are important substitutes, and the geographic market, that is, which firms are physically close enough to provide viable substitutes. Because most products are differentiated, there is rarely a clear demarcation between products that are important substitutes and those that are not. Consequently, it is likely that the results of various antitrust studies on pricing behavior of newspapers differ due to the difference in market definitions. Hence, the definition of market is important in identifying the constraints on price setting behavior of newspapers. The identification of the market for newspapers to analyze price setting behavior of newspapers, known as the relevant market, has to rely on economic analysis and empirical verification (Blair and Page 1996; Scheffman and Spiller 1987, 1996). In particular, empirical analysis is an essential feature for identifying the relevant market for newspapers. It is essential to use real data and information from the industry. Due to the fact that the newspaper industry is well-documented, it is possible to empirically analyze the relevant market for newspapers. There are a number of ways in which the identification of the relevant market for newspapers can be empirically assessed. The most common approach is to test the relationship between market structure and prices (Thompson 1984; Evans, Froeb and Werden 1993). This study is also based on this approach. It analyses the relationship between market structure and subscription prices and advertising rates of newspapers. If it is found that pricing behavior of newspapers positively depends on high concentration, then this means that the newspapers operate under competitive constraints. This implies that the relevant market is wider than the defined product or geographical market.

For many years, the regional newspaper market in the Netherlands is divided into 50 CEBUCO areas. However, due to changing behavior of readers and advertisers and proliferation of other media sources, it is likely that the relevant regional areas have also changed. Therefore, this study investigates whether the CEBUCO areas are still the relevant market for regional newspapers in the Netherlands. The price-market structure method is used to identify the relevant market for regional newspapers.

The structure of the paper is as follows. In the next section various definitions of relevant markets are discussed. The main markets are trading markets, antitrust markets and strategic markets. The third section describes the sample and the variables for the analysis. Then section four presents the empirical findings. The final section discusses the findings and concludes.

## 2 Relevant Market

Market definition is a tool to identify and define the boundaries of certain types of economic activities. These boundaries are imaginary lines which are imposed on reality to isolate certain activities from others in order to make sense for the researcher, policy maker or managers.<sup>1</sup> However, due to their different objectives, the different kinds of professionals are generally identifying different market boundaries, although it is likely that they start with the classical identification. The classical identification of the boundaries is based on the identification of areas over which the same net price prevails for the same

<sup>1</sup> Of course, there exist many definitions of relevant markets with each characterized by its own imaginary boundaries. This study mainly focuses on the relevant market definition in the context of antitrust issues. For an extensive overview of market boundaries see Geroski (1998).

product or service; i.e. the minimum area over which the law of one price holds (Marshall 1920). These identified areas together are then called the trading market. The identification of the trading market is particularly interesting in the context of price discrimination, because it is a minimum area in which the relatively homogenous demand located in a network of arbitrage is strong enough to sustain a single price. Therefore, antitrust authorities are interested in using this approach to identify the relevant market for antitrust issues, because arbitrage can temper the exercise of market power. Although the identification of the trading market is an acceptable approach for antitrust cases, it is more common to identify the antitrust market. The antitrust market is the minimum area in which both product and geographic dimensions are considered to assess competition issues, particularly exercise of market power in that area. This concept is namely based on the identification of a set of producers, products or services and a geographical area in which the creation of a significant amount of market power is possible in principle. Or as the US Department of Justice (1992) emphasized that the antitrust market or relevant market should be defined as

“a product or group of products such that a hypothetical profit-maximizing firm that was the only present or future producer or seller of those products would impose at least a small but significant and non-transitory increase in price, assuming the terms of sale of all other products are held constant. The relevant market is a group of products and a geographical area no bigger than is necessary to satisfy this test.”

Clearly, if the antitrust market is defined too narrowly, in such a way as to exclude very close substitutes, a hypothetical single producer could not raise prices above the competitive level without losing his customers. On the other hand, if the market were defined too largely, the ability to exercise market power could be substantially underestimated (Forni 2004).

Although the trading market and the antitrust market definitions are well established, they do not incorporate the firm's need for profitable activities. Moreover, firms do not always operate in markets whose boundaries are defined as part of a certain set of economic activities. They may operate in a wider market than the defined relevant market in order to survive. Consequently, firms are more focused on the strategic market. This is

“the smallest area within which it is possible to be a viable competitor” (Kay 1990: 3).

In other words, firms identify markets which inevitably encompass people and places, needs and functions and any particular supply side factor such as technology and consumer functions (Geroski 1998). Hence, supply side factors also are important in the identification of the relevant market. Therefore, the market boundaries to define the relevant market should not only reflect demand side forces but also supply side forces.

### 3 Method

Data for this study were collected from the Dutch Bureau for Newspaper Publicity (CEBUCO), the Dutch Central Bureau of Statistics (CBS), and publishers. CEBUCO provided information on publisher, circulation, advertising costs and subscription prices for each of the daily newspapers. These data were complemented by individual newspaper data from publishers for non-CEBUCO daily newspaper members. The CBS provided information

on population density and regional income. The income data are for provinces only, which tend to encompass more than one CEBUCO area.

In total, we observed 52 regional daily newspapers and 8 national dailies in the Netherlands in 1999 (Van Kranenburg 1999, 2001). A newspaper is defined as a daily newspaper if it satisfied five criteria (Carroll 1987, Van Kranenburg 1998). Daily newspapers appeared at least 6 days a week. They must be available to anyone willing to pay the price, regardless of class or special interest. Furthermore, their contents should consist of timely information and the selected material should be of interest to general public, as contrasted with religious and/or business publications. Finally, daily newspapers are directed to a geographically and linguistically demarcated market of consumers and advertisers.

The daily newspaper market in the Netherlands is divided into 50 areas. The areas in the study are based on the classification that is published by CEBUCO. It is likely that such geographic definition is too narrow, given the fact that many/most regional newspapers have a wider circulation area. However, this classification is important to test the existence of market power in these areas and to identify the relevant markets. For every CEBUCO area in the data set the following information is available:

1. *The average subscription price for each area.* The subscription price for each regional newspaper sold in the area has been multiplied by its share in the area circulation. The average subscription price for each CEBUCO area is the sum of the obtained values.
2. *The average advertising price for each area.* We use the cost per thousand because this indicator measures the effective price of a regional newspaper advertisement. It is the cost for an advertiser of reaching a target number of potential customers for a product or service being advertised. This indicator is the generally used measure of price among media buyers and media users.
3. *Concentration of publishers in area.* The Herfindahl-Hirschmann Index is used to measure the concentration of publishers in a CEBUCO area. It is the sum of squares of each publisher circulation in the CEBUCO area. The values range from zero for a perfectly competitive market to 10,000 for a monopoly. This measure includes national, regional and local newspapers. If prices are not related, or negatively related to concentration then either the market is larger than the CEBUCO area or there is enough competition in the area.
4. *Share of national newspapers.* This also is a market structure variable. It measures the market share of national newspapers as a percentage of total newspaper circulation in the CEBUCO area. On the reader market regional newspapers compete with national newspapers (Van Kranenburg 2002). On the advertising market regional newspapers also face competition from alternative advertising media among them national newspapers. Hence, regarding the newspaper type, national newspapers are in the same product market as regional newspapers. Therefore, we expect that if national newspapers represent viable competition for regional newspapers, that the market share of national newspapers is negatively related to the price of regional newspapers.

5. *Economies of scale.* Prices are also dependent upon barriers to entry, such as economies of scale. In general, it is difficult to measure economies of scale. The most adequate measure is minimum efficient scale of newspapers. However, the information on minimum efficient scale is not available for the Dutch newspaper market. Therefore, this study uses acceptable proxy variables for the effect of economies of scale on pricing the total size of the market and costs of distribution. The economies of scale component based on total market size is measured as total newspaper circulation in the CEBUCO area.
6. *Population density.* The costs of distribution are measured by the population density for each CEBUCO area.<sup>2,3</sup>
7. *Regional income.* Another barrier of entry is the willingness to pay on behalf of the buyers. This barrier in a CEBUCO-level analysis can be proxied by the level of income in the area. However, due to the fact that income data for each CEBUCO area is not available, we use average income data for the provinces (Friesland, Groningen, Drenthe, Gelderland, Overijssel, Flevoland, Noord-Brabant, Limburg, Utrecht, Zuid-Holland, Noord-Holland, and Zeeland) in the Netherlands, which tend to encompass more than one CEBUCO area. Consequently, this indicator is a rough measure for localized incomes.

This study estimates a cross-section OLS price-market structure model. It estimates the relationship between subscription prices and advertising prices of regional newspapers and market structure and other area characteristics. The unit of observation in the analysis is the CEBUCO area and the explanatory variables are calculated at the level of the CEBUCO area.

#### 4 Empirical Findings

Table 1 presents some descriptive statistics for the CEBUCO areas. Out of 50 CEBUCO areas, there are 33 areas where a single newspaper captures half or more of the total area circulation. In just one area a national newspaper captures a market share of more than 50 percent of the readers market. In only 15 areas the national newspapers taken together hold a market share of 50 percent or more of the area circulation. Moreover, out of these 15 areas where national newspapers have the majority of circulation, 14 areas are characterized by the lack of a dominant newspaper. These areas are dominated by relatively small, regional newspapers whose total circulation is smaller than that of national newspapers. Furthermore, the evidence also shows that there are only 14 areas where a single publisher has 75 percent or more of the readers market. Out of these 14 areas, there are 11

<sup>2</sup> It also is possible to interpret the variable population density for every area as an indicator for the demand effect. If there exists economies of scale in advertising or distribution then an area which is sparsely populated will be able to support one or only a few newspapers operating at minimum efficient scale. It is expected that as demand increases, subscription prices would go down in the presence of economies of scale. On the other hand, the effect of demand is positively related to advertising prices. Moreover, advertisers might be willing to pay more to advertise in more densely populated areas.

<sup>3</sup> Grotta (1977) found a high correlation between aggregate circulation and area population. However, today, due to circulation trends, this is not so clearly the case. Lewis (1995) found no significant relationship between aggregate circulation and area population. In this study, the correlation between these two variables also is low.

Table 1

**Characteristics of the 50 CEBUCO Newspaper areas in the Netherlands in 1998**

Areas	Average number of newspapers in area	Average number of publishers in area	Number of one publisher holds at least 75% of the area market	Number of markets where national newspapers hold at least 50% of the area market	Number of markets where one newspaper holds at least 50% of the area market
Total of 50 areas	11.0	4.5	14.0	15.0	33.0
Type of area:					
Area with a single dominant paper	10.6	4.5	11.0	2.0	33.0
Area with a non-single dominant paper	11.9	4.4	3.0	13.0	0.0
Area where nationals have 50% or more market share	11.7	4.3	3.0	15.0	2.0
Area where nationals have less than 50% market share	10.7	4.6	11.0	0.0	31.0

Source: CEBUCO &amp; publishers.

areas where these publishers owned a single dominant newspaper and in 3 areas their national newspapers capture more than half of the readers market. It is also interesting to see the difference in pricing strategy of newspapers in the different areas. Table 2 presents the average subscription prices and advertising prices in cost per thousand (regional and national newspaper prices are included). The evidence shows that advertising rates, on average, are higher in areas which are dominated by national newspapers. However, the average subscription prices are lower in areas dominated by national newspapers, although the difference is less than 1 percent. On average, advertising prices are lower in areas which are dominated by a single newspaper in comparison to the overall average in the 50 CEBUCO areas, although subscription prices are practically the same. Furthermore, Table 2 shows that the concentration of publishers in the areas where national newspapers do capture a majority of market share and the non-dominant single newspaper markets are lower in comparison to the concentration of publishers in the other types of areas. An interesting finding is that the advertising rates, on average, are higher in the two types of areas. However, the relationship between the average subscription prices and the type of newspaper area is inconclusive. In addition, econometric regression analyses are used to further increase the process of determination of subscription prices and advertising rates in the newspaper market in the Netherlands. Two regressions have been performed to investigate which factors influence the average subscription prices of regional newspapers and the average advertising rates of regional newspapers in the 50 CEBUCO areas.<sup>4</sup> Table 3 shows

<sup>4</sup> The price-market structure approach can show a problem of endogeneity regarding market concentration and prices. If the problem of endogeneity appears then the cross-section regression of prices on market structure yields a biased estimate. For instance, market concentration can be a process of economies of scale. Moreover, the presence of cost advantages for newspapers may lead to low prices. These low prices can force newspapers to exit from the market and therefore increase concentration, see also Evans, Froeb and Werden (1993). In this study, the correlation between concentration and economies of scale is 0.092.

Table 2

### Average of Subscription Prices, Advertising Rates, and Concentration in Specific Newspaper Areas in the Netherlands 1998<sup>1</sup>

Areas	Average advertising price	Average subscription price	Average publisher concentration
	In cost per Thousand	In guilders (1 guilder = 2.273 Euro)	In HHI
Total out of 50 areas	0.0230	393.95	5,003.8
Type of area:			
Area with a single dominant paper	0.0222	393.81	5,408.8
Area with a non-single dominant paper	0.0245	394.22	4,217.7
Area where nationals have 50% or more market share	0.0245	392.02	4,555.6
Area where nationals have less than 50% market share	0.0223	394.77	5,195.9

<sup>1</sup> Regional and national newspapers are included in the calculation of the subscription prices and advertising rates.

Source: CEBUCO & publishers.

the results for the average subscription prices of regional newspapers in the 50 CEBUCO areas in the Netherlands. It shows that concentration of publishers (measured by HHI) in the CEBUCO area has a significant negative impact on the subscription price of regional newspapers.<sup>5</sup> The implied elasticity of price with respect to concentration of publishers is equal to  $-0.055$ .<sup>6</sup> This means that an increase of the concentration of publishers in an area by 1 percent reduced the subscription price by 0.055 percent. The parameter estimate of share of national newspapers is negative and statistically significant different from zero. The implied elasticity of subscription price with respect to the share of national newspapers in CEBUCO area is about  $-0.034$ . This means that an increase of 1 percent in the share of national newspapers in a CEBUCO area reduces the subscription price of regional newspapers with 0.034 percent. These findings suggest that the presence of national newspapers represents a competitive constraint on the pricing behavior of regional newspapers at the area level. Moreover, the readers market for regional newspapers is not limited to regional newspapers. The relevant market also includes national newspapers. Furthermore, the variables economies of scale in an area and the population density in the model do not demonstrate a significant impact on the subscription price of regional newspapers.<sup>7</sup> The relationships between subscription price of regional newspapers and economies of scale and density in an area seem weak. Finally, an insignificant effect of regional income is found. This implies that pricing behavior of regional newspapers is not dependent on the

<sup>5</sup> Concentration can also be measured by number of newspapers or number of publishers in each area instead of the HHI. However, multicollinearity problem appears when the number of newspapers or the number of publishers is included in the models.

<sup>6</sup> The elasticity of price is calculated by multiplying the estimated coefficient ( $-0.0043$ ) by the ratio of average concentration of publishers (5003.8) to average subscription price (392.57).

<sup>7</sup> Economies of scale can also be measured by average circulation per newspaper in an area. Models with average circulation per newspaper instead of total market size did also show no significant effect of economies of scale on prices of regional newspapers.

Table 3

### Regression Results for the Determinants of Subscription Prices and Advertising Rates of Regional Newspapers in the 50 CEBUCO Areas in the Netherlands

Variables	Subscription Price		Advertising Rate	
Constant	408.3832 <sup>3</sup>	(49.9618)	0.0047	(0.0115)
Concentration of publishers in area	-0.0043 <sup>3</sup>	(0.0017)	-0.0008 <sup>2</sup>	(0.0004)
Share of national newspapers in area	-32.9913 <sup>2</sup>	(13.7501)	0.0031	(0.0032)
Economies of scale in area	0.0369	(0.0317)	0.0022	(0.0073)
Population density in area	0.0002	(0.0021)	0.0010 <sup>2</sup>	(0.0005)
Regional income	0.0008	(0.0027)	0.0010 <sup>1</sup>	(0.0006)
Number of CEBUCO areas	50		50	
Adj-R-squared	0.094		0.324	

**1** Significant at 10 percent.

**2** Significant at 5 percent.

**3** Significant at 1 percent.

Standard errors in parentheses.

Source: CEBUCO, CBS & publishers.

difference in income levels of area. It is clear that other factors determine the price of regional newspapers.

Table 3 also reports the estimation results for the average advertising rates measured by cost per thousand for regional newspapers in the 50 CEBUCO areas in the Netherlands. The parameter estimate for concentration of publishers in an area is negative and differs statistically from zero. The evidence also implies that there exists a negative relationship between advertising rates of regional newspapers and the concentration of publishers in a CEBUCO area. The implied elasticity of advertising rate with respect to concentration is about -0.16. This means that a 1 percent increase in the concentration of publishers (measured by HHI) relates to a reduction in advertising rates of 0.16 percent. Furthermore, the share of national newspapers does not significantly influence the advertising rate behavior of regional newspapers. The parameter estimate is statistically not significant different from zero. The results show that the advertising market for regional newspapers is not explicitly constrained by national newspapers. However, the concentration of publishers implies that the advertising market for regional newspapers includes other substitute products. Furthermore, advertising rates, differently to subscription prices, are significantly influenced by regional income and particularly by population density in the specific area. The implied elasticity of advertising rate with respect to population density is 0.55 percent. Both factors have a positive effect on the advertising rate behavior of regional newspapers. These findings imply that regional newspapers are setting higher advertising rates in areas that are characterized by higher population density and income. Moreover, the more customers could be reached in an area the higher the advertising rate is set by a regional newspaper.

## 5 Discussion and Conclusion

This study analyses whether the subscription prices and the advertising rates of regional newspapers are affected by the market structure and competition in the readers and the advertising markets for regional newspapers. Within the neo-classical theory, a non-competitive market structure is expected to have a positive effect on the pricing behavior of firms (Van Kranenburg 2001). Moreover, evidence showed that the number of firms in a given area is negatively related to the prices of products. However, circulation industries are generally more complicated than the standard joint products framework. The pricing behavior of firms within these industries depends explicitly and implicitly on two markets: copies are sold on the readers market and space is sold on the advertising market (Rosse 1967, Busterna 1988). The special duality nature of the industry can render a counterintuitive price response in the markets. A decrease in the price of the products of circulation firms may increase circulation. Consequently, the firms are confronted with an increase in the demand for the product on the advertising market. This is known as demand interdependence. Evidence showed that this effect appears when competition from other media exists (Chaudhri 1998, Van Kranenburg 2001). Therefore, it is important to identify the relevant market. In doing so, antitrust authorities, researchers and other professionals would be better able to analyze the pricing behavior of newspapers. The identification of the relevant market has to rely on economic analysis and empirical verification. In particular, empirical analysis of identification of the relevant market is becoming an essential feature of major pricing behavior issues in the circulation industries. This study used the most common approach to identify the relevant market, although the price-market structure approach also has its weaknesses (see Evans, Froeb and Werden 1993). It analyses the relationship between market structure and average subscription prices and average advertising rates of regional newspapers in 50 areas in the Netherlands. The price-market structure analysis can show whether the definition of relevant market need to be changed.

Our empirical findings show that higher concentration among regional newspapers in the Netherlands does not generally lead to higher average subscription prices. In this study the publishers are used as the unit for the calculation for concentration rather than the newspapers. The reason is that publishers are more concentrated than newspapers, because publishers can own more newspapers in a particular area. Consequently, the finding that at a higher concentration level prices are unaffected would represent an even stronger result. This finding implies that other competitive constraints exist which influence the strategic pricing behavior of regional newspapers. Among these competitive factors is the presence of national newspapers. In areas where national newspapers have a significant market share they represent a constraint on the pricing behavior of regional newspapers. Another interpretation of this finding is that the model underestimates the importance of competition. If newspapers do not price discrimination between regions, no effect of concentration on prices can be found. However, Van Kranenburg (2001) showed that that newspapers and publishers could not increase prices after consolidations due to the existence of competitive constraints in the newspaper market in the Netherlands. The findings of this study are in line with that study.

Furthermore, the result shows that the advertising market for regional newspapers is not explicitly constrained by national newspapers, although the effect of concentration of publishers implies that the advertising market for regional newspapers includes other substi-

tute products. The empirical result shows that advertising rates of regional newspapers decrease as the market gets more concentrated. The findings also suggest that not only the market structure does affect the advertising prices for advertisers, but also the characteristics of an area. In particular, the population density in an area and the average income in a region positively affect the advertising pricing behavior of regional newspapers. Regional newspapers with a high coverage of an area and good household penetration are valuable carriers of advertisements targeted at a regionalized population or population subgroup.

This study shows that regional newspapers do not only compete with other regional newspapers, but also compete with other media. However, this price-market structure study could not show where exactly these constraints come from and what mechanism affects the pricing behavior of regional newspapers. The overall conclusion is that competitive constraints operate in a wider market, which encompasses more than just regional newspapers. In addition, other studies showed that traditional audiences of print media are altering their media use patterns as the number and range of content providers increase, and advertisers are responding to the new opportunities to reach potential customers (Picard 2003). In particular, general electronic media and new digital media are increasing the competitive pressure on the newspapers.

Nowadays, people in the Netherlands spend on average 10 percent of their leisure time on reading newspapers, while they watch TV for more than 70 percent of their leisure time. In the last decade, the time spending on reading newspapers is declining, while spending time on Internet is increasing in the Netherlands (Commissariaat voor de Media 2002). Another trend is that the average age of audience for newspapers is growing older because fewer young persons are reading newspapers. In the Netherlands, the categories readers with an age between 12 and 49 showed the largest decline in the last decade (Commissariaat voor de Media 2002). At the same time, readers are also reading fewer newspapers (Van Kranenburg 1999). Furthermore, the increasing choices among newspapers and all other media sources are resulting in less time spent reading overall. Consequently, newspapers are selling fewer copies and therefore newspapers become a less attractive source for advertisements in comparison to other sources. A decline in advertisements also stimulates a further decline of circulation. Furthermore, advertisers also have more alternatives for their advertisements. Although, reader behavior is at the heart of changes in newspaper markets, the advertiser responses to reader changes also are critical factors in the surviving chances of newspapers. Due to all these changes in reader and advertiser choices and the proliferation of other types of media, regional newspapers compete with other regional and national newspapers and other media sources, for instance local TV and radio, direct mail and outdoor advertising. Hence, the relevant market for regional newspapers is a market which encompasses more than just regional newspapers. Therefore, it is recommended for further research to investigate price setting behavior of regional newspapers in a broader identified relevant market.

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