

## **Methodological Aspects and Methods of Transfer Pricing in Ukrainian Banking Institutions\***

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*ABSTRACT.* This article examines the methodological aspects and methods of transfer pricing in Ukrainian banking institutions.

It explores the approaches used to define the functions of transfer pricing from the perspective of pricing theory and enterprise economics theory. It reviews the international and national experiences in the legal regulation of this type of pricing. It identifies the methodological preconditions for the use of transfer prices in banking institutions.

The paper examines graphic models of transfer pricing. Based on calculations from the Hirschmann-Herfindale Index and the Lerner Index, it determines the level of competition on the banking market in Ukraine as of 1 January 2006. Conclusions are made concerning the practical utility of a theoretical model of transfer pricing, based on a study of the nature of an intermediate banking product and the degree of competitiveness of the banking market in Ukraine. The paper reviews the transfer pricing practices in Ukrainian banking institutions.

*KEY WORDS.* Transfer price, transfer price functions, graphic models of transfer pricing, intermediate product, end product, level of market competition, transfer pricing methods.

### **Introduction**

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\* This article was translated from its original in Ukrainian.

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Ukraine recently was granted the status of a market economy, the United States revoked the Jackson-Vanik amendment, and experts forecast that this country will become a member of the World Trade Organization (WTO) by the end of 2006. Ukraine's global economic and financial integration is accompanied by the inflow of foreign investors who bring in new methods of information, financial and material resources management, including those based on transfer pricing.

Transfer pricing methods are most widely introduced by banking institutions. This tendency is developing due to two factors. First, foreign investors are traditionally present in the banking sector, and this sector has recently witnessed a significant inflow of international capital. Secondly, the majority of local banking institutions have decentralized system of branches, which facilitates the wider use of transfer pricing methods.

Using transfer prices allows banking institutions to ensure a fair financial assessment of their individual divisions, track the profitability of banking products, and determine the efficiency of management decisions. Transfer pricing methods are widely used to create budgeting and planning systems.

Certain Ukrainian banks actively develop and implement transfer pricing methods, but there are practically no significant studies of this issue in the Ukrainian academic literature. This paper studies the necessary methodological foundations and provides arguments in favor of methods that allow the creation of an effective transfer pricing system.

### **Overview of recent publications and research**

Ukrainian academic literature provides insufficient coverage of theoretical aspects of transfer pricing and its practical use. Ukrainian researchers K. Zhydko and N. Shulga offer a schematic overview of conceptual foundations of transfer pricing in their

works<sup>1</sup>. In his article «*Methods of Assessing Basic Financial Operations of a Commercial Bank with the Help of the Transfer Pricing System*», Ukrainian economist S. Sokolovsky pointed out certain aspects in the application of the transfer pricing system in a banking institution<sup>2</sup>.

Studies by Russian academics, who explore the use of transfer pricing both in the actual economy (N. Vafina) and the banking sector (A. Zubarev, R. Olkhova, M. Romyantsev), seem to be more diverse and fundamental.<sup>3</sup> Both Ukrainian and Russian researchers refer to the experience of transfer pricing in developed market economies. The works of American and West European researchers indeed reveal a valuable theoretical and practical study of transfer pricing.<sup>4</sup>

The purpose of this article is to study certain aspects of methodology and methods of transfer pricing in Ukrainian banking institutions (Fig. 1).

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<sup>1</sup> Zhydko K. Teoretychni osnovy pobudovy systemy transfertnoho tsinoutvorennia u banku, in *Visnyk Natsionalnoho banku Ukrainy*, 2005, No. 1, p. 52—56.; Shulga N.P. Transfertne tsinoutvorennia yak instrument biudzhetuvannia komertsynoho banku, in *Problemy i perspektyvy rozvytky bankivskoyi systemy Ukrainy*, V. 5, Sumy, Mriya LTD, 2002.

<sup>2</sup> Sokolovskiy S. Metodyka otsinky osnovnykh finansovykh operatsiy komertsynoho banku za dopomohoyu systemy transfertnoho tsinoutvorennia, in *Visnyk Natsionalnoho banku Ukrainy*, 2000, No. 8, p. 31—33.

<sup>3</sup> Vafina N.Kh. Transfertnoe tsenoobrazovanie: zarubezhnyi opyt, in *Finansy i kredit*, 2003, No. 9, p. 30—36; Zubarev A.V. Vnutrennyy hozraschet v banke, transfertnoe tsenoobrazovanie, in *Bankovskoe delo* (in Russian), 2001, No. 1, p. 14—18; Olkhova R.G. Transfertnoe tsenoobrazovanie v sisteme upravleniya dokhodnostiu banka, in *Bankovskie uslugi* (in Russian), 2001, No. 7, p. 34—48; Rumiantsev M.V. Voprosy metodologii i metodiki transfertnoho tsenoobrazovania, in *Bankovskie uslugi* (in Russian), 2004, No. 2, p. 5—12.

<sup>4</sup> Colin Drury. *Management and Cost Accounting*, Fourth edition, London, International Thomson Business Press, 1996; Tang R. Transfer pricing in the 1990's, in *Management Accounting* (USA), 1992, February, p. 22—26.

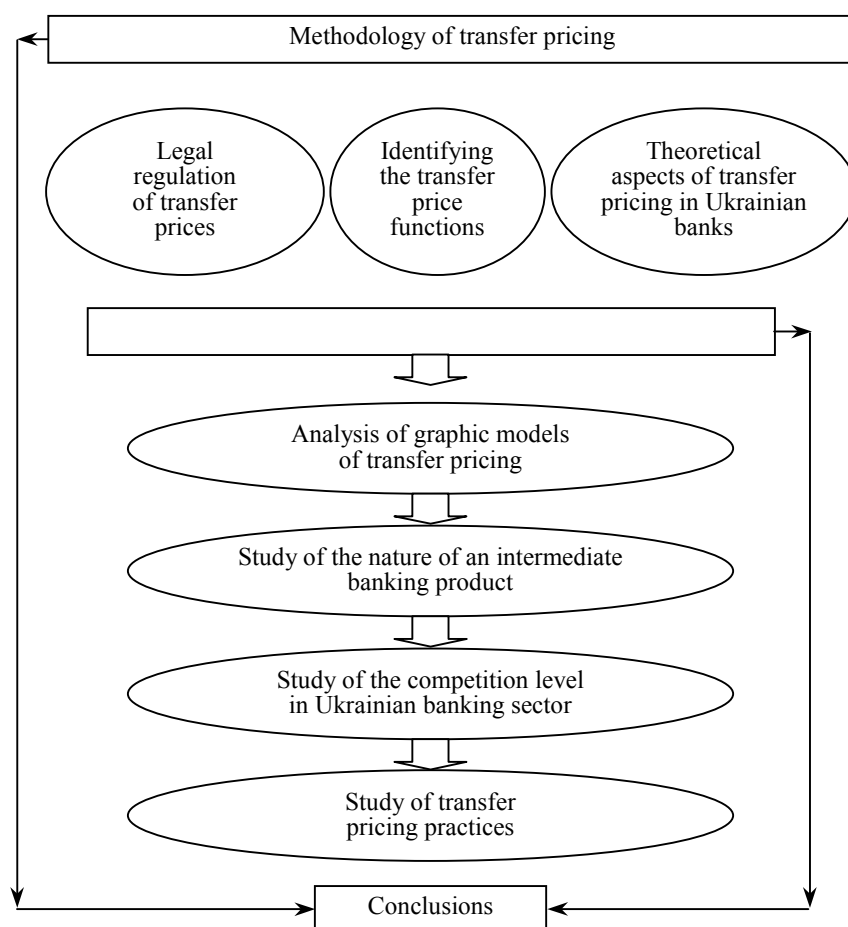


Fig. 1. Flow chart of this article  
Methodological aspects of transfer pricing  
**The Legal Regulation of Transfer Prices**

The legal regulation of transfer pricing is of significant importance when it comes to correctly determining gross revenues and expenses of the divisions of transnational corporations and consequently the calculation of profits. An objective estimate of profit made by a division of a transnational corporation helps to obtain a fair value of tax charges.

The Ukrainian legal code provides no specific act that regulates transfer pricing. However, the *Law on Taxation of Companies' Profits* indirectly regulates

internal prices of a transnational corporation.<sup>5</sup> Paragraph 4 of Article 7 outlines specific aspects of taxation applied to transactions with the entities concerned. According to subparagraph 26 of Article 1 of the Law, such entities include divisions of translational corporations. Gross revenues and expenses of these entities are regulated by comparing prices with the 'regular price' which, in turn, according to subparagraph 20 of Article 1, is a fair market price.

Until the late 1970s, developed market economies controlled the transfer pricing at national levels. The U.K. adopted the relevant law at the end of the 1950s. The Federal Republic of Germany regulated certain domestic issues related to the determination of transfer prices for corporations back in 1965 when it adopted the law on corporations.

Economic globalization intensified the need for transfer pricing regulation at the international level in terms of taxation of transnational corporations. In the 1970s the Organization for Economic Cooperation and Development (OECD) developed principles to avoid double taxation whenever transfer prices are used in international trade.<sup>6</sup> In 1979 the OECD Tax Committee issued a report called «*Transfer Pricing and Multinational Enterprises*» for the purpose of establishing the level of transfer prices and their recalculation into market prices in the interests of tax authorities, and in 1994 this Committee issued the document, «*Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations*». They were revised in 1996 and 1997 taking into account greater globalization of transnational corporations.

These OECD revisions are flexible, set forth moderate documentation requirements, establish non-hostile relations between tax authorities and transnational corporations, and are characterized as recommendations. According to this regulatory document, national tax authorities may request documentation that discloses the methods used to calculate trans-

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<sup>5</sup> Law on Taxation of Companies' Profits of 28 December 1994, at <http://zakon.rada.gov.ua>.

<sup>6</sup> Vafina N.Kh. Transfertnoe tsenoobrazovanie: zarubezhnyi opyt, in *Finansy i kredit*, 2003, No. 9, p. 30—36.

fer prices by international corporations. Thus, the specific scope and degree of details of documents which tax authorities may request need to be established. Tax authorities may audit transnational corporations and determine the fairness of the established level of transfer prices taking market equivalents of those prices as the base. The OECD recommends that both criminal and commercial penalties be imposed for noncompliance with transfer pricing procedures.

The majority of these recommendations were incorporated by Western European countries and the United States in their legislation. For instance, British legislation on transfer prices was adjusted in 1999 as the new *Transfer Pricing Rules* were adopted.<sup>7</sup> A major difference of the new version of transfer pricing rules is that they expand the scope of their use: some 40 % of corporations are covered by new rules. The new version is fully consistent with the OECD recommendations and provides clear mechanisms on how to impose penalties for noncompliance.

The majority of investigations into transfer prices have been conducted in the U.S., Canada and the U.K..<sup>8</sup> For instance, *Nissan Company* paid 17 billion yen to the U.S. Internal Revenue Service in 1993 for transferring a part of its revenue from the United States to Japan with the help of transfer prices and thus avoided paying U.S. taxes. Another American transnational company *Coca-Cola* paid significant fines for breaking the tax law in 1994. In the same year, U.S. tax authorities imposed penalties on 392 transnational companies for misuse of transfer prices and charged an additional US\$3.5 billion in taxes. Moreover, 56 % of U.S. corporations and 50 % of U.K. corporations were audited by U.S. tax authorities in 1996.

**Identifying transfer price functions.** Transfer pricing is a complex economic method of increasing the efficiency of industry management, the study of which focuses on at least two economic subjects: pricing theory and enterprise economics theory.

<sup>7</sup> The New United Kingdom Transfer Pricing Rules, in *The International Tax Journal*, 1999, p. 58—69.

<sup>8</sup> Krylov V.M. *Transfertnyye tseny: osnovnyye funktsyi i problemy*, in *Finansy i kredit*, 2002, No. 7, p. 20—24.

Transfer price, as a separate type of price, may be studied from the perspective of general pricing theory.<sup>9</sup> Today, pricing theory is dominated by an integrated approach to understanding the substance of price, which combines the Karl Marx theory of value, research by A. Marshal and A. Pigue, marginal theory and individual choice theory by P. Samuelson. The latter two theories study the price phenomenon predominantly from the perspective of factors on the demand side, while the theory of value examines factors that affect production from the supply side, with Marshal and Pigue taking demand and supply as equally important pricing factors.

The economic substance of transfer price may be explained with the help of value theory and market theories of price, without changing the principles of these theories, on condition that the following assumption is accepted: the divisions of one legal entity are recognized as individual economic agents (economic entities). This assumption helps to introduce the concepts of 'in-house value' and 'in-house marginal utility' to get better insight into transfer price within the value and marginal price theories. Therefore, a comprehensive interpretation of transfer pricing as a specific type of price depends on the level of economic freedom exercised by the divisions of an organization in terms of economic decision making, including decisions on establishing the level of in-house prices. In an organization with highly decentralized management functions, divisions have greater discretion in economic decision making. The transfer price in such organizations internally has all five functions that prices normally have: functions of accounting and measuring, balancing, stimulation, redistribution, and location of economic activity.<sup>10</sup>

According to the theory of enterprise economics, the transfer price should be viewed as an important component of the internal economic mechanism of an enterprise which is based on decentralized management and expanded responsibility of its divisions

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<sup>9</sup> Utkin Ye.A. *Tseny. Tsenoobrazovanie. Tsenovaya politika: Uchebnik*, Moscow, Ekmos, 1997.

<sup>10</sup> Yesipov V.Ye. *Tseny i tsenoobrazovanie: Uchebnik*, 3rd revised edition, St-Petersburg, Piter, 1999.

for their own business results. From this perspective, the main functions of transfer prices include financial incentives for personnel based on the performance results of divisions, and the distribution of costs at their place of origin. O. I. Volkov<sup>11</sup> presented a comprehensive interpretation of the system of in-plant economic relations and internal pricing as one of its major components. From the perspective of the theory of enterprise economics, the transfer price is a method of achieving the production objectives of an enterprise.

***Examining theoretical aspects of transfer pricing in Ukrainian banking institutions.*** In order to extrapolate the results of this study of methodological principles of transfer pricing to banking institutions, certain aspects of the use of this type of pricing in monetary institutions should be highlighted.

First, the legal regulation of transfer pricing in banking institutions appears to be especially important in view of the active inflow of international capital in the national banking system and the high probability that the Ukrainian parliament will pass amendments to the *Law on Banks and Banking Activity*<sup>12</sup> to liberalize the opening of branches by foreign banks in Ukraine. Secondly, the term 'transfer price' seems to be more appropriate when it comes to describing the pricing process within a banking institution, while its equivalent 'in-house price' should rather be used to denote pricing in companies of the non-financial sector of the economy.

To maintain the functional and meaningful weight of 'transfer price' as an economic concept, it is necessary to restrict its use only to pricing within one legal entity. This restriction needs to be made whenever the concept is defined in economic reference and should be taken into account when this concept is defined in the legislation. It is not expedient to use it to denote the movement of goods, work and services between legal entities which are

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<sup>11</sup> *Ekonomika predpriyatiya*, Ed. by O.I. Volkov, Moscow, Infra-M, 1997.

<sup>12</sup> *Law on Banks and Banking Activity* of 7 December 2000, at <http://zakon.rada.gov.ua>.



members of a certain association which is not a legal entity. Under Article 9 of the *Law on Banks and Banking Activity*, banks may establish the following bank associations: a bank corporation, a bank holding group, and a financial holding group. The Law provides that a bank corporation is a legal entity (bank), whose founders and stockholders are other banks, while a bank holding group and a financial holding group are bank associations. Therefore, the term 'transfer pricing' may be used to denote pricing within a banking corporation, but it should not be used to denote pricing within a banking holding group or a financial holding group.

### **Methods of transfer pricing**

#### ***Analysis of graphic models of transfer pricing.***

The theory of marginal analysis is universal and the most common method for examining the efficiency of price related decision making within a company.<sup>13</sup> Marginal analysis is widely applied in modern theoretical studies to determine the firm efficiency in markets with various levels of competition. The graphic models of transfer pricing designed according to marginal analysis will now be examined.<sup>14</sup>

We propose to study three graphic models of transfer pricing, which describe the company's performance in the absence and in the presence of an external market for the intermediate product and take into account the competition in this market. It should be noted that these graphic models were created based on empirical data of companies in the tangible sector of the economy, but they may also be used to model the operation of financial institutions in view of the universal nature of the method of marginal analysis.

The following assumptions were used in the models:

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<sup>13</sup> Campbell R. McConnell, Stanley L. Brue. *Economics: printsypy, problemy i politika*, translated from English, 11th edition, Kiev, Khagar-Demos, 1993; Paul A. Samuelson, William D. Nordhouse. *Mikroekonomika*, translated from English, Kiev, Osnovy, 1998.

<sup>14</sup> Colin Drury. *Management and Cost Accounting*, fourth edition, London, International Thomson Business Press, 1996.

- The company is composed of two divisions: a division that produces the intermediate product (supply division) and a division that consumes this product by transforming it into an end product (consuming division);

- The intermediate product is subject to transfer pricing and is used for production by the company's end product which is sold to external consumers;

- A theoretically correct transfer price is the price that encourages the divisions to work at the level of end product output which is optimal for the entire company.

Adaptation of these assumptions to the specific environment of a banking institution would be as follows:

- ✓ Supply divisions in a banking institution could be the divisions that generate the bank's resources (deposit divisions) while the consuming divisions are the divisions that allocate the collected resources (credit divisions);

- ✓ The intermediate banking product is the amount of financial liabilities (this argument was supported in the previous section of this article);

- ✓ A theoretically correct transfer price is the price that helps to optimize the operation of the entire banking institution.

**1. Model of transfer pricing in the presence of a competitive external market for the intermediate product.**<sup>15</sup> The competitive market is the market of absolute competition with a large number of sellers and buyers who cannot influence it. From the short term perspective, the selling price is represented as a horizontal line. (Fig. 2).

External market price for the intermediate product is established at the OP level and, since the external market is assumed to be competitive, the marginal revenue from the sale of intermediate product is fixed and is represented by the horizontal line PE. NMR is the line of net marginal revenue of the division that consumes the intermediate product and sells the end product, which represents the difference between the marginal

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<sup>15</sup> Charles I. Transfer-price solution where market exists, in *Accountancy*, 1986, July, p. 96-99.

revenue and marginal cost of this division less the transfer price paid to the supply division. The transfer price will be established at the level of market price for the intermediate product on the external competitive market (OP).

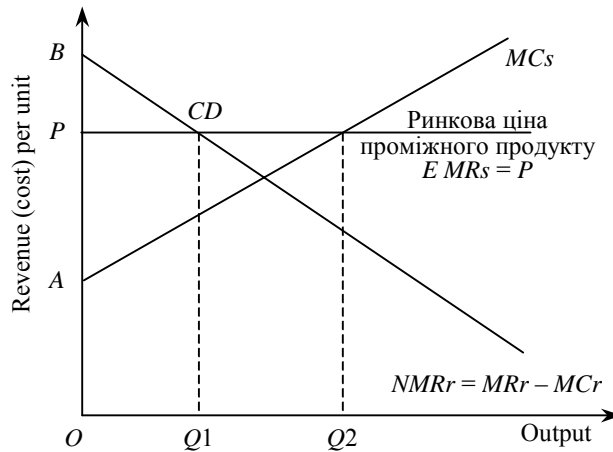


Fig. 2. Transfer pricing in the presence of a competitive external market for the intermediate product

With this transfer price, the consuming division will require the volumes of intermediate product equal to  $OQ_1$  as this would ensure the parity of its marginal cost ( $P = MC_r$ ) and revenue ( $NMR_r$ ). The consuming division may take the intermediate product both from the supply division and external market at the same price. The supply division will also be able to sell the intermediate product both in the in-house and external markets at the same price. To achieve the optimum level of production ( $MC_s = MR_s$ ), the supply division may produce the intermediate product in volumes equal to  $OQ_2$  and sell any additional volumes of its product ( $Q_1Q_2$ ) in the external market while the volume  $OQ_1$  will be supplied to the consuming division at the transfer price.

It should be noted that the net marginal revenue of the entire company is represented by the BCDE curve and the most profitable level of production for the entire company will be at the crossing point of marginal cost of the entire company as repre-

sented by  $ADE$  curve, i.e. in point  $D$ . Therefore, the company should ensure the production in volumes equal to  $OQ_2$ , which is equivalent to the optimum volume of intermediate product manufactured by the supply division. Therefore, on condition of the presence of a competitive external market for the intermediate product, the orientation of transfer pricing to the external market price will stimulate company divisions to ensure optimum production volumes.

**2. Transfer pricing in the absence of an external market for the intermediate product.** Sometimes the external market for the intermediate product is non-competitive or nonexistent (Fig. 3).

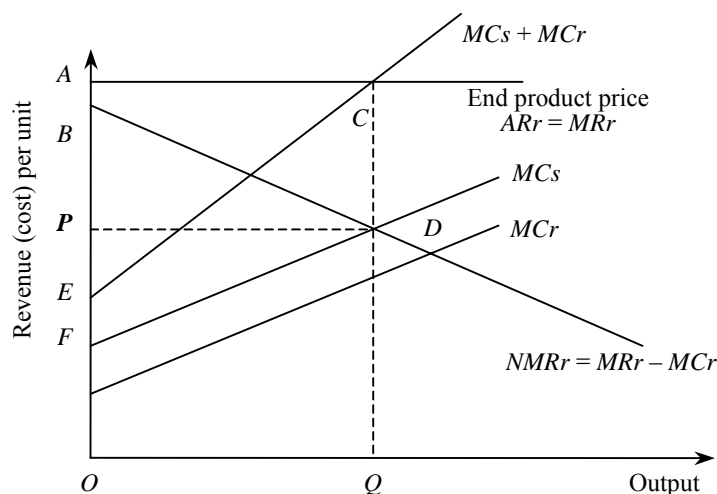


Fig. 3. Transfer pricing in the absence of an external market for the intermediate product.

When the division which supplies the intermediate product has no production restrictions, the transfer price should be set at the  $OP$  level (the  $PD$  line represents the marginal revenue of the supply division), which ensures maximum revenue for the intermediate product supply division at the optimum level of end product output for the entire company. A more

detailed analysis of this graphic model is offered in the works of foreign researchers.<sup>16</sup>

**3. Transfer pricing in the presence of a noncompetitive external market for the intermediate product.** The optimum transfer price, which would stimulate company divisions to maintain the necessary production level (OQ3) corresponds to OPT value (ensures optimization of revenue for the supply division and the company on the whole). The supply division will maximize its revenue by selling the intermediate product in amounts equal to OQ1 at price OPe on the external market and selling any additional amount (Q1Q3) at price OPT to the consuming division (Fig. 4).

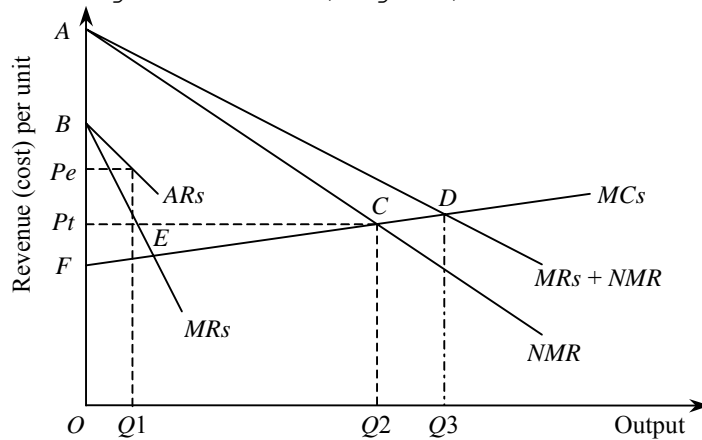


Fig. 4. Transfer pricing in the presence of a noncompetitive external market for the intermediate product

This solution is also an optimum solution for the consuming division which needs to consume the intermediate product in amount OQ2, where section OQ1 equals Q2Q3, and therefore section OQ2 equals Q1Q3. A more detailed analysis of this graphic model can be found in the works of foreign researchers.<sup>17</sup>

<sup>16</sup> Charles I. The economics approach to transfer price, in *Accountancy*, 1985, June, p. 110-112; Colin Drury. *Management and Cost Accounting*, fourth edition, London, International Thomson Business Press, 1996.

<sup>17</sup> Colin Drury. *Management and Cost Accounting*, fourth edition, London, International Thomson Business Press, 1996

**Study of the nature of intermediate banking products.** In order to make practical use of the graphic models of transfer pricing analyzed above, the economic nature of the intermediate banking product needs to be examined.

The contemporary research literature outlines four major approaches to determining the nature of 'banking product' and 'banking service': monetary, legal, marketing, and client approaches.<sup>18</sup> The main postulates of the above theories may be analyzed from the perspective of two understandings of the nature of banks.

The first approach understands a commercial bank as a specific enterprise that manufactures a unique product (goods of unique nature in the form of money and payment instruments) and perceives the market of banking products as the 'producer's (bank's) market'. From this perspective, the banking product is conceived of as a certain amount of monetary liabilities (monetary approach). The banking service, in its turn, is interpreted as a 'service of a monetary nature', a service that helps move the money from account to account or creates monetary funds.

The second approach is built on the understanding of a commercial bank as a financial intermediary whose primary function is to serve the needs of its clients and perception of the market of banking products as the 'consumer's (client's) market'. Based on this logic, the banking product is interpreted as a form of a banking service which, in its turn, is aimed at satisfying the client's needs (marketing and client approach). Therefore, the banking service is viewed as the functional substance of the bank whereas the banking product is a form of this substance. In other words, the banking product and service are dialectically interrelated as the form and substance respectively.

Taking into account the specific methodology and methods of using transfer pricing, this article understands 'a bank' as a specific enterprise that produces a unique product and 'a banking service' is

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<sup>18</sup> Perekhozhev V.A. Sovremennye podhody k ponimaniyu kategoriy 'bankovskiy produkt', 'bankovskaya usluga' i 'bankovskaya operatsiya', in *Finansy i kredit* (in Russian), 2002, No. 21, p. 23—33.

understood as a certain amount of monetary liabilities.

Unlike other sectors of the economy, the financial sector on the whole and the banking system in particular have a common (universal) substantive platform for all products which they produce. Any product of a financial enterprise is based on monetary liabilities of a certain amount. Foreign banking institutions offer over three hundred banking products; while Ukrainian banks offer a half or one third of that number of services, all of them are based on certain monetary liabilities. Intermediate banking product is also a form of monetary liabilities and does not differ in substance from the end banking product.

Therefore, the intermediate banking product as the object of transfer pricing has its analogues in external markets. For Ukraine, these markets include the Interbank Credit Market, Interbank Currency Exchange, a market for deposits and credits for legal entities and individuals, etc. One may question the objectiveness of information from the above external markets, but the very fact of their existence is undisputable.

Therefore, we came to the conclusion that the intermediate banking product has its market analogues. By analyzing the level of competition in the Ukrainian banking market, we will determine which of the graphic models of transfer pricing may become the theoretical basis for developing an effective transfer pricing method.

***Study of the level of competition in the Ukrainian market of banking products.*** Matching real markets with theoretical models of markets (pure competition market, monopolistic competition market, oligopoly, and pure monopoly) is one of the most complex issues in microeconomics since the functioning markets are permanently influenced by various economic and sociopolitical factors.

The level of competitiveness of the Ukrainian market of banking products can be determined by applying the market competitiveness assessment methods which are most commonly used in the world. The subject matter for this study is the market of banking

products in general without division into banking transactions and services. Due to the lack of necessary information, this research does not take into account the market of nonbanking products from nonbanking financial institutions.

**First to be analyzed is the Ukrainian banking market with the help of the method of formal logic.** Using the formal characteristics (Table 1) provided in the academic literature<sup>19</sup>, the following table is formed.

**Table 1. Formal characteristics of basic market models**

Formal characteristics of basic market models	Market model			
	Pure competition	Monopolistic competition	Oligopoly	Pure monopoly
Number of companies	Very many	Many	Several	One
Type of product	Standardized	Differentiated	Standardized or differentiated	Unique
Price control	None	Some control but within certain limits	Limited, significant in case of collusion	Significant
Market access	Very easy, no barriers	Comparatively easy	Significant barriers	Access blocked
Non-price competition	None	Significant focus on advertisement, trademarks, brands, etc.	Very typical, especially in case of product differentiation	Primarily the advertisement of the company's social activity

The results of the analysis of the Ukrainian banking market based on the above criteria are provided in Table 2. The degree of correspondence between a formal characteristic and the real situation is ranged with the help of points: 0 – does not correspond; 0.5 – partially corresponds; 1 – fully cor-

<sup>19</sup> Campbell R. McConnell, Stanley L. Brue. *Economics: printsypy, problemy i politika*, translated from English, 11th edition, Kiev, Khagar-Demos, 1993.



responds. The market of pure competition and the market of monopolistic competition received the highest score under the formal analysis method – 3 and 2.5 points respectively. Therefore, the Ukrainian market of banking products may be characterized as one that partially corresponds to the theoretical model of pure competition market and partially corresponds to the monopolistic competition market.

**Table 2. Specific features of the Ukrainian banking market**

Specific features	Market model, correspondence points				Ukrainian banking market
	Pure competition	Monopolistic competition	Oligopoly	Pure monopoly	
Number of companies	1	0.5	0	0	Very large
Type of product	1	0	0.5	0	Mostly standardized, sometimes differentiated
Price control	1	0.5	0	0	Almost none, sometimes insignificant
Market access	0	1	0	0	Comparatively easy
Non-price competition	0	0.5	0.5	0	Existing but insignificant
<b>Total points</b>	<b>3</b>	<b>2.5</b>	<b>1</b>	<b>0</b>	

The next approach to measuring market competition is based on examining 'the relative markup' or the Lerner index. This method of measuring the monopoly power of a company was proposed in 1934 by economist Abba Lerner and so it was called the Lerner index of monopoly power.<sup>20</sup> This test is expressed by the following mathematical formula:

<sup>20</sup> Robert S. Pindyke, Daniel L. Rubinfeld. *Mikroekonomika*, translated from English, Kiev, Osnovy, 1996.

$$I_l = \frac{P - MC}{P} = \frac{1}{E}, \quad (1)$$

$I_l$  – the Lerner index of monopoly power;

$P$  – price;

$MC$  – marginal cost;

$E$  – demand elasticity for the company's goods.

The Lerner index is always between zero and one.  $P = MC$  represents the absolutely competitive company, and so  $L = 0$ . The greater the index, the higher degree of monopoly power the company has on the market. To analyze the entire market of banking products, we propose to adapt Formula 1 by multiplying its numerator and denominator by the total volume of production of banking products by all Ukrainian banks in 2005 ( $Q$ ). Therefore, the derivative  $P \cdot Q$  will reflect the total revenues while derivative  $MC \cdot Q$  will reflect total costs of the Ukrainian banking system in 2005 (for the purposes of our analysis, we assume that marginal costs ( $MC$ ) are equal to average total costs ( $ATC$ )). According to the official site of the National Bank of Ukraine ( $NBU$ )<sup>21</sup> in 2005, the total revenues and costs of banks were 27,480.6 million hryvnia and 25,073.1 million hryvnia, respectively. Using the adapted variant of the Lerner index, we will find that the relative markup in the Ukrainian banking system in 2005 was 0.0876 of the price for the banking product. This markup level, comparing to other sectors of the economy, is insignificant and characterizes the domestic market of banking products as quite competitive.

**Now, we propose to use the method of measuring the market concentration with the help of the Hirschmann-Herfindale index<sup>22</sup>:**

$$I_{HH} = S_1^2 + S_2^2 + S_3^2 + \dots + S_n^2, \quad (2)$$

$I_{HH}$  – the Hirschmann-Herfindale index;

$S_1$  – market share of the largest company;

$S_2$  – market share of the next largest company;

<sup>21</sup> [http:// bank.gov.ua](http://bank.gov.ua)

<sup>22</sup> Nureev R.M. *Osnovy ekonomicheskoy teorii: Mikroekonomika*, Moscow, Vyshaya shkola, 1996.

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$S_n$  – market share of the smallest company.

In order to calculate this index, we use the data on the share of the company's products in its sector, i.e. the company's market share. It is envisaged that the larger the company's share in its sector, the greater the potential possibility that the monopoly will strengthen. It should be noted that the market share of a banking institution could be assessed by determining the share of the bank's assets compared to the total assets of the banking system. This approach depends on the specific nature of the banking activity where the assets (or liabilities) fully reflect the sale volumes of banking products.

If there is only one company on the market (i.e. when we deal with a pure monopoly),  $S_1 = 100\%$ , and  $I_{HH} = 10\,000$ . If there are 100 similar companies in the sector,  $S_i = 1\%$ , and  $I_{HH} = 100 \cdot S_i^2 = 100$ . In the U.S., a market is considered highly monopolized when the Hirschmann-Herfindale index exceeds 1,800. This index is widely used for antimonopoly purposes.

Having calculated the market share of each of 163 banks licensed by the NBU to perform banking operations as of 1 January 2006, based on the data from the official NBU site<sup>23</sup>, and having summed their squares, we obtained the Hirschmann-Herfindale index for the Ukrainian banking system. This index is 389.39 points, taking into account sales, which again confirms that there is no excessive concentration in the domestic market of banking products. A more detailed calculation of the index is provided in Annex 1.

**And finally, let's use a simpler and more transparent and clear method for measuring market power proposed by Paul A. Samuelson – William D. Nordhaus.**<sup>24</sup> The essence of this method consists of examining the market shares of market leaders. Based on the empirical data of the U.S. economy, authors of this method proposed the following criteria for de-

<sup>23</sup> <http://bank.gov.ua>

<sup>24</sup> Paul A. Samuelson — William D. Nordhaus. *Mikroekonomika*, translated from English, Kiev, Osnovy, 1998.

fining market competitiveness: a market has a high degree of concentration if the four largest companies control over 60 % of the market, while the four largest companies would produce not more than 20 % of products on the markets with a low degree of concentration.

Leaders in the Ukrainian banking system are Privatbank – 10.31 % of the market, Aval – 9.00 % of the market, Prominvestbank – 6.82 % of the market, and Ukrspotsbank – 5.03 % of the market. These leading banks together control 31.17 % of the Ukrainian market of banking products. A more detailed calculation of the index is provided in Annex 1. Therefore, on the one hand, we cannot say that the market concentration is low, but on the other hand, the four leading banks control about one third of the market, which is a relatively high level. Because of the lack of access to information, this study does not take into account the possibility that one owner may control several banks.

An analysis of the Ukrainian market of banking products shows that it is quite competitive and none of its participants has the monopoly power to control prices, except the National Bank of Ukraine. The NBU, however, is not a regular player in the banking market as it performs a specific function of regulating and ensuring the stability of the national currency.

Based on the research results of the nature of the intermediate banking product and the level of competition in the domestic banking market, we conclude that the strategy for developing the transfer pricing methods should be a graphic model which provides for the existence of a competitive external market for intermediate products (Fig. 2). This model recognizes the need to focus on market indicators during the development of transfer pricing method.

### **Practical importance of the research**

The practical importance of this research can be verified by comparing its results with global and

national practices of transfer pricing. The research by Roger Y.W. Tang can be taken as the base<sup>25</sup> to analyze the practice of transfer pricing in 500 major American corporations (corporations included in the Fortune 500 Index). The research was conducted in 1990 through a survey that covered 143 respondents who represented 28.6 % of the total number of corporations included in the research. (Table 3).

**Table 3. Use of transfer pricing methods by major U.S. corporations, %**

Transfer pricing methods	U.S. business		International business	
	1990	1977	1990	1977
Based on costs	46.2	50.4	41.4	46.6
Based on market prices	36.7	31.5	45.9	39.0
Based on negotiations	16.6	18.1	12.7	13.6
Other methods	0.5	0	0	0.8
Total	100	100	100	100

American researchers Roger Y.W. Tang, C.K. Walter and R.H. Raymond<sup>26</sup> conducted a similar survey in 1979 (Table 3). Comparing the results of the 1977 and 1990 surveys, we notice a general tendency towards the reduced use of transfer pricing methods based on costs and negotiations and increased use of transfer pricing methods based on market prices by more than 5 points.

The experience of using transfer pricing methods in other developed countries is illustrated in Table 4.<sup>27</sup>

<sup>25</sup> Tang R. Transfer pricing in the 1990's, in *Management Accounting* (USA), 1992, February, p. 22-26.

<sup>26</sup> Roger Y.W. Tang, C.K. Walter, and R.H. Raymond. Transfer Pricing — Japanese vs. American Style, in *Management Accounting*, 1979, January, p. 12-16.

<sup>27</sup> Drury C., Braund S., Osborne P. and Tayles M. *A Survey of Management Accounting Practices in UK Manufacturing Companies*, London, ACCA Research Paper, Chartered Association of Certified Accountants, 1993

**Table 4. Use of transfer pricing methods, %**

Transfer pricing methods	Country			
	Japan	U.S.	Austria	Canada
	Year of survey			
	1979	1990	1991	1992
Based on market prices	34	37	13	34
Based on costs	46	46	65	46
Based on negotiations	19	16	11	18
Other methods	1	1	11	2

As one can see from Table 4, about half of the companies rely on their own costs in establishing transfer prices. This is explained by the lack of competitive external markets for many intermediate products for which transfer pricing is done. At the same time, more than one third of companies are developing transfer pricing systems based on market prices.

In April 2006 this author conducted a survey on transfer pricing practices in Ukrainian banking institutions. The survey was made by distributing questionnaires among 55 banks with the biggest assets, which together comprise 33.7 % of the total banks licensed by the National Bank of Ukraine to conduct banking operations as of 01.01.2006. The assets of the banks included in the survey totaled 88.3 % of all assets of the Ukrainian banking system as of 01.01.2006. Other balance sheet ratios of this group of banks were approximately on the same level. Therefore, the sampling may be considered as representative in view of the market share of the banks covered by this survey. As of now, 16 responses were received, 29 % of the total number of respondents. Representatives of six banks noted that they are not using the transfer pricing system but they plan to introduce it in the nearest future. Representatives of ten banks confirmed that they are using the transfer pricing system. Certain survey results re-

lated to transfer pricing methods and the period of their use are provided in Table 5.

As we can see, the majority of banking institutions are using both market indicators and their own costs to determine the level of transfer prices. These results can be rather explained by insufficient reliability, promptness and efficiency of information arriving from the markets of end banking product in Ukraine. It should also be noted that the Ukrainian banks have little experience of using transfer prices (only one banking institution uses transfer prices for more than 5 years) and there is a need to further improve this instrument of financial management.

**Table 5. Using transfer pricing methods in Ukrainian banking institution**

Transfer pricing methods	Certain aspects of the used methods		Period of use	
	Number of responses	Share ( %)	Less than 5 years (number of responses)	More than 5 year (number of responses)
Focus on market indicators	1	10 %	1	
Focus on costs	1	10 %	1	
Focus on market indicators and costs	6	60 %	6	1
Other	2	20 %	2	
Total	10	100 %	9	1

### Conclusions

The new realities of increasing integration processes in the financial sector of Ukraine's economy objectively encourage the use of innovative methods of doing business. Transfer pricing is one such method. It is not common in the domestic practice but is widely used in developed market economies. This research offers a comprehensive and systematic

analysis of methodology and methods of transfer pricing in Ukrainian banking institutions.

The research has prompted the following conclusions:

- The issue of legal regulation of transfer pricing should be addressed as soon as possible by way of the adoption of special laws and regulations complying with OECD recommendations.

- The functions of transfer prices should be identified in the framework of the general theory of pricing and the theory of enterprise economics.

- The term 'transfer pricing' may be used with reference to pricing within a banking corporation as a separate legal entity.

- Graphic models that help to determine transfer prices were analyzed, and it was concluded that, based on the study of the nature of intermediate banking product and competition level on the Ukrainian market of banking products, transfer prices for intermediate banking products should be established based on market indicators.

- The transfer pricing practices in Ukrainian banks have been studied.

It should be noted that the study of methods that help to create an effective transfer pricing system should not be limited to the nature of the intermediate banking product and analysis of the competition level at the banking market. Further research could focus on the following issues:

- ✓ Optimum balance between decentralization and concentration of the management structure of an organization; this issue was examined in detail by David J.H. Watson and John V. Baumler.<sup>28</sup> The authors believe that the transfer pricing system based on contract transfer prices will ensure an optimum balance between decentralization and integration of the management structure of an organization.

- ✓ Approaches to efficient forecasting of any transfer pricing method based on discriminating analysis.<sup>29</sup>

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<sup>28</sup> Watson D.H. and Baumler J.V. Transfer pricing: a behavioural context, in *Accounting Review*, 1975, 50(3), p. 466—474.

<sup>29</sup> Mostafa A., Sharp J. and Howard K. Transfer pricing — survey using discriminant analysis, in *Omega*, 1984, 12(5), p. 465—474.



✓Adapting the dual transfer pricing system for use by local banking institutions<sup>30</sup>. This system is based on blending two approaches to transfer pricing: the market method for divisions that buy the intermediate product on the internal market and sell the processed end product on the external market, and the costs method for divisions that produce the intermediate product and sell it to other divisions.

This article will be useful to government agencies involved in developing the legal regulation of transfer prices and companies with decentralized management structure, which would like to improve their system of internal financial management, as well as other readers who wish to learn more about innovative methods of financial management.

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## ANNEX 1

**Calculation of the Hirschmann-Herfindale index  
and market power index for the leading banks**

Market power index for the leading banks: **31.17 %**  
Hirschmann-Herfindale index: **389.393**

№ in or- der	№ in grou- p	Bank	Total assets as of 01.01.2006	Bank's market share	Square of the market share
<b>Group 1</b>					
1	1	PRYVATBANK	22,058,095	10.31 %	106.366
2	2	AVAL	19,258,774	9.00 %	81.082
3	3	PROMINVESTBANK	14,590,344	6.82 %	46.537
4	4	UKRSOTSBANK	10,762,963	5.03 %	25.324
5	5	UKRSYBBANK	10,669,190	4.99 %	24.885
6	6	UKREXIMBANK	10,376,114	4.85 %	23.536
7	7	OSCHADBANK	9,515,315	4.45 %	19.793
8	8	RAIFFEISEN BANK UKRAINE	7,048,988	3.30 %	10.862
9	9	NADRA	5,922,497	2.77 %	7.668
10	10	BROKBIZNESBANK	4,768,831	2.23 %	4.972
11	11	FINANSY TA KREDYT	4,421,711	2.07 %	4.274
12	12	UKRPROMBANK	4,109,059	1.92 %	3.691
<b>Group 2</b>					
13	1	FORUM	3,752,673	1.75 %	3.079
14	2	PERSHY UKR. MIZHNARODNY BANK	3,577,324	1.67 %	2.798
15	3	KHRESCHATYK	3,144,648	1.47 %	2.162
16	4	KREDYTPROMBANK	2,904,880	1.36 %	1.845
17	5	ING BANK UKRAINE	2,587,010	1.21 %	1.463
18	6	UKRGAZBANK	2,387,265	1.12 %	1.246
19	7	VABANK	2,351,156	1.10 %	1.208

№ in order	№ in group	Bank	Total assets as of 01.01.2006	Bank's market share	Square of the market share
20	8	PIVDENNY	2,302,891	1.08 %	1.159
21	9	INDUSTRIALNO-EXPORT. BANK	2,215,329	1.04 %	1.073
22	10	DONGORBANK	2,141,040	1.00 %	1.002
23	11	ALFA-BANK	2,132,548	1.00 %	0.994
24	12	PRAVEX-BANK	2,123,520	0.99 %	0.986
25	13	KREDYT BANK (UKRAINE)	2,028,417	0.95 %	0.899
26	14	TAS-KOMERTSBANK	2,024,159	0.95 %	0.896
27	15	MRIYA	1,927,942	0.90 %	0.813
		<b>Group 3</b>			
28	1	RODOVID BANK	1,829,178	0.86 %	0.731
29	2	INDUSTRIALBANK	1,799,289	0.84 %	0.708
30	3	IMEXBANK	1,625,807	0.76 %	0.578
31	4	CITIBANK (UKRAINE)	1,573,301	0.74 %	0.541
32	5	KHFB BANK UKRAINE	1,520,840	0.71 %	0.506
33	6	EXPRESS-BANK	1,455,108	0.68 %	0.463
34	7	KYIV	1,441,494	0.67 %	0.454
35	8	TAS-INVESTBANK	1,237,675	0.58 %	0.335
36	9	KREDYT-DNIPRO	1,095,207	0.51 %	0.262
37	10	PROCREDIT BANK	1,073,555	0.50 %	0.252
38	11	MORSKY TRANSPORTNY BANK	1,051,021	0.49 %	0.241
39	12	BIG ENERGIA	1,013,015	0.47 %	0.224
40	13	KALION BANK UKRAINE	948,268	0.44 %	0.197
41	14	NRB-UKRAÏNA	902,363	0.42 %	0.178
42	15	MEGABANK	812,129	0.38 %	0.144
43	16	EXPOBANK	734,469	0.34 %	0.118
44	17	UNIVERSALNY BANK ROZVYT. TA PARTN.	722,879	0.34 %	0.114
45	18	UKRINBANK	708,722	0.33 %	0.110
46	19	FAKTORIAL-BANK	690,556	0.32 %	0.104
47	20	DIAMANT	679,966	0.32 %	0.101

№ in order	№ in group	Bank	Total assets as of 01.01.2006	Bank's market share	Square of the market share
48	21	ZAKHIDINKOMBANK	673,496	0.31 %	0.099
49	22	TAVRYKA	654,698	0.31 %	0.094
50	23	KYIVSKA RUS	626,763	0.29 %	0.086
51	24	DNISTER	615,704	0.29 %	0.083
52	25	AZHIO	613,719	0.29 %	0.082
53	26	PERSHY INVESTYTSINY BANK	587,530	0.27 %	0.075
54	27	AGROBANK	572,450	0.27 %	0.072
55	28	BANK PETROCOMMERCE-UKRAINE	551,847	0.26 %	0.067
		<b>Group 4</b>			
56	1	FINANSOVA INITSIATYVA	743,694	0.35 %	0.121
57	2	AKTYV BANK	605,984	0.28 %	0.080
58	3	VNESHTORGBANK	562,886	0.26 %	0.069
59	4	ELEKTRON BANK	514,188	0.24 %	0.058
60	5	BAZYS	490,542	0.23 %	0.053
61	6	TRANSBANK	473,802	0.22 %	0.049
62	7	ARKADA	473,210	0.22 %	0.049
63	8	MIZH Narodny Komertsiyny Bank	466,807	0.22 %	0.048
64	9	NATSIONALNI INVESTYTSIYI	461,705	0.22 %	0.047
65	10	UKRAINSKY PROFESIYNY BANK	443,307	0.21 %	0.043
66	11	ZOLOTI VOROTA	441,366	0.21 %	0.043
67	12	POLTAVA BANK	439,258	0.21 %	0.042
68	13	AVTOZAZBANK	436,812	0.20 %	0.042
69	14	ENERGOBANK	432,302	0.20 %	0.041
70	15	UKRGAZPROMBANK	417,351	0.20 %	0.038
71	16	FINANSOVY SOYUZ BANK	408,110	0.19 %	0.036
72	17	YEVROPEISKY	406,406	0.19 %	0.036
73	18	UKRAINSKY FINANSOVY SVIT	395,660	0.18 %	0.034
74	19	BANK REGIONALNOGO ROZ-VYTKU	390,343	0.18 %	0.033

№ in order	№ in group	Bank	Total assets as of 01.01.2006	Bank's market share	Square of the market share
75	20	MISTO-BANK	389,113	0.18 %	0.033
76	21	UNIVERSALNY	385,527	0.18 %	0.032
77	22	NOVY	379,050	0.18 %	0.031
78	23	INPROMBANK	376,342	0.18 %	0.031
79	24	FORTUNA BANK	352,307	0.16 %	0.027
80	25	MERKURI	345,958	0.16 %	0.026
81	26	NATSIONALNY KREDYT	335,283	0.16 %	0.025
82	27	ARTEM BANK	317,829	0.15 %	0.022
83	28	KAPITAL	314,429	0.15 %	0.022
84	29	UKRKOMUNBANK	304,574	0.14 %	0.020
85	30	SKHIDNOYEVROPESKY BANK	303,227	0.14 %	0.020
86	31	UKRAINSKY BIZNES BANK	297,655	0.14 %	0.019
87	32	LEGBANK	296,484	0.14 %	0.019
88	33	KLIRYNGOVY DIM	295,441	0.14 %	0.019
89	34	KAMBIO	294,164	0.14 %	0.019
90	35	METALURG	287,296	0.13 %	0.018
91	36	YEVROPEISKYI BANK ROZ-VYT. TA ZAOSCH.	286,672	0.13 %	0.018
92	37	UKRAINSKY KREDYTNY BANK	285,661	0.13 %	0.018
93	38	AGRARNY KOMERTSIYNY BANK	284,598	0.13 %	0.018
94	39	PROMEKONOMBANK	267,366	0.13 %	0.016
95	40	DEMARK	259,148	0.12 %	0.015
96	41	PRYVATINVEST	240,051	0.11 %	0.013
97	42	INTEGRAL	237,856	0.11 %	0.012
98	43	SYNTEZ	235,211	0.11 %	0.012
99	44	INTERBANK	229,845	0.11 %	0.012
100	45	INTERKONTYNTBANK	229,661	0.11 %	0.012
101	46	PIVDENKOMBANK	226,652	0.11 %	0.011
102	47	AVTOKRAZBANK	225,838	0.11 %	0.011
103	48	YEVROPEISKY BANK RATSION. FINANS.	217,436	0.10 %	0.010

№ in order	№ in group	Bank	Total assets as of 01.01.2006	Bank's market share	Square of the market share
104	49	BANK PEKAO (UKRAINE)	214,177	0.10 %	0.010
105	50	FINBANK	211,630	0.10 %	0.010
106	51	PROMYSLOVO-FINANSOVY BANK	207,851	0.10 %	0.009
107	52	GRANT	200,902	0.09 %	0.009
108	53	REAL BANK	196,604	0.09 %	0.008
109	54	PRYKARPATTYA	195,823	0.09 %	0.008
110	55	STOLYTSYA	195,025	0.09 %	0.008
111	56	PRYCHORNOMORYA	194,295	0.09 %	0.008
112	57	KYIVSKY UNIVERSALNY BANK	192,150	0.09 %	0.008
113	58	UKRAINSKY KAPITAL	190,247	0.09 %	0.008
114	59	KONTRAKT	178,292	0.08 %	0.007
115	60	DANIEL	175,605	0.08 %	0.007
116	61	KOOPINVESTBANK	174,111	0.08 %	0.007
117	62	IKAR-BANK	170,092	0.08 %	0.006
118	63	CHORNOMORSKY BANK ROZ-VYTKU TA REKONSTR.	168,916	0.08 %	0.006
119	64	STAROKYIVSKY BANK	163,512	0.08 %	0.006
120	65	ZEMELNY BANK	162,529	0.08 %	0.006
121	66	KOMERTSIYNY INDUSTRIALNY BANK	162,458	0.08 %	0.006
122	67	PORTO-FRANKO	162,257	0.08 %	0.006
123	68	OBYEDNANY KOMERTSIYNY BANK	161,710	0.08 %	0.006
124	69	TK KREDYT	156,504	0.07 %	0.005
125	70	POLIKOMBANK	153,153	0.07 %	0.005
126	71	TAS-BIZNESBANK	151,017	0.07 %	0.005
127	72	VOLODYMYRSKY	148,810	0.07 %	0.005
128	73	UKRAINSKY KREDYTNO-TORHOVY BANK	145,904	0.07 %	0.005
129	74	YUNEKS	145,288	0.07 %	0.005
130	75	UKRAINSKA FINANSOVA GRUPA	142,282	0.07 %	0.004



№ in order	№ in group	Bank	Total assets as of 01.01.2006	Bank's market share	Square of the market share
131	76	SOTSKOMBANK	131,091	0.06 %	0.004
132	77	INVESTBANK	125,100	0.06 %	0.003
133	78	FAMILNY	122,767	0.06 %	0.003
134	79	ARMA	121,561	0.06 %	0.003
135	80	ODESA-BANK	113,451	0.05 %	0.003
136	81	UKOOSPILKA	112,412	0.05 %	0.003
137	82	REGION BANK	111,197	0.05 %	0.003
138	83	DIALOGBANK	106,391	0.05 %	0.002
139	84	TRAST-KAPITAL	103,528	0.05 %	0.002
140	85	TMM-BANK	102,511	0.05 %	0.002
141	86	LVIV	101,521	0.05 %	0.002
142	87	MORSKY	101,272	0.05 %	0.002
143	88	SLAVUTYCH	99,394	0.05 %	0.002
144	89	INVEST-KRYVBAS BANK	96,702	0.05 %	0.002
145	90	OLIMPIYSKA UKRAINA	90,850	0.04 %	0.002
146	91	SKHIDNO-PROMYSL. KOMERTS. BANK	90,116	0.04 %	0.002
147	92	BANK «PERSPEKTYVA»	88,614	0.04 %	0.002
148	93	MIZHNNARODNY IPOTECHNY BANK	88,008	0.04 %	0.002
149	94	ZEMELNY KAPITAL	78,789	0.04 %	0.001
150	95	PRAIM-BANK	78,112	0.04 %	0.001
151	96	FINEXBANK	69,438	0.03 %	0.001
152	97	RADABANK	67,019	0.03 %	0.001
153	98	VELES	63,334	0.03 %	0.001
154	99	FINROSTBANK	61,868	0.03 %	0.001
155	100	GARANT	59,748	0.03 %	0.001
156	101	UKRAINSKY BUDIVELNO- INVEST.BANK	55,510	0.03 %	0.001
157	102	ALYANS	54,527	0.03 %	0.001
158	103	FERMERSKY ZEMELNY BANK	54,068	0.03 %	0.001
159	104	UKRAINSKY BANK REK-	45,319	0.02 %	0.000

№ in order	№ in group	Bank	Total assets as of 01.01.2006	Bank's market share	Square of the market share
		ONSTR.TA ROZV.			
160	105	KLASYKBANK	43,916	0.02 %	0.000
161	106	STOLYCHNY	37,806	0.02 %	0.000
162	107	BANK INVESTYTS. TA ZAOSCH.	35,121	0.02 %	0.000
163	108	YEVROBANK	27,636	0.01 %	0.000
		Total in banks	213,877,982	100.00 %	389.393