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NEW APPROACH IN DEVELOPMENT ECONOMY: INFORMAL ECONOMY, A SOCIETAL SCOURGE**HIND MALIKA MERAD BOUDIA****Ph.D. STUDENT****INFORMAL ECONOMY RESEARCH LABORATORY, INSTITUTIONS AND DEVELOPMENT****ECONOMICS DEPARTMENT****"ABOU BAKR BELKAID" UNIVERSITY OF ECONOMICS, COMMERCE AND MANAGEMENT SCIENCE****TLEMCEM, ALGERIA****Dr. CHAIB BOUNOUA****PROFESSOR****INFORMAL ECONOMY RESEARCH LABORATORY, INSTITUTIONS AND DEVELOPMENT****ECONOMICS DEPARTMENT****"ABOU BAKR BELKAID" UNIVERSITY OF ECONOMICS, COMMERCE AND MANAGEMENT SCIENCE****TLEMCEM, ALGERIA****ABSTRACT**

Despite its predominant weight, both in countries in transition and in developed countries, informal economy has long remained largely unknown, constituting a blind spot in public policies. In recent years, special attention has been paid to this economy, because it constitutes an adjustment mechanism in times of crisis or major institutional changes. Tax evasion, counterfeiting, selling without invoices, using cash, bribery, bureaucracy, etc. have been identified as very frequent informal practices, going so far as to become the standard par excellence. A descriptive study with an analytical aim was carried out. The objective is to understand the characteristics and dynamics of the informal economy, many jobs valve, in order to facilitate the structural and institutional transformations of countries, to diversify their economies, and no longer be limited to small service or subsistence activities.

KEYWORDS

informal economy, corruption, institutional change, tax evasion.

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INTRODUCTION

Development economics is an ancient discipline and a branch of science which analyzes and studies the major problems facing countries. It applies modern techniques and means to be able to help the least developed countries to escape the trap of underdevelopment, considered to be their greatest possible evil. The informal economy is a sub-branch of development economics, which emerged in the late 1960s in the work of anthropologist Keith Hart, then through the International Labor Office in its "Kenya Report". This economy exists in developed countries as well as in developing countries, thus harming the management of the macroeconomics of states, since it escapes the national accounts of an economy, thus depriving them of significant income. It is a survival economy that does not undertake long-term activities, and it is also less productive than a formal economy, because of the time lost for hidden transactions. The informal economy includes all productive activities, which are beyond the control of the state. The International Labor Organization (ILO) Department of Statistics, and the 17th ICLS have taken up the challenge of developing new frameworks to better identify the phenomenon of informality. It has attempted to conceptualize a framework for defining the informal economy, presented and adopted at the International Labor Conference in 2002, the informal economy was defined by them as « any economic activity carried out by workers or economic units, not covered or insufficiently covered - by law or in practice - by official provisions ». Before going any further, it would be wise to distinguish two periods in the vision of the informal economy, promoted by international institutions (notably the International Labour Office, and the World Bank). The first period (1971-1987) when debates were established by several experts on definitions, survival strategies and policies for formalizing a dynamic fraction of small businesses. The second period (1987-2004) or in the face of disastrous results obtained after the implementation of structural adjustment programmes, the informal sector, which was considered to be the greatest possible evil for States, was considered this time as a solution to all social problems, such as poverty. At that time, several concepts replaced the informal sector, namely: the informal economy, decent work, solidarity economy, good governance, micro-finance, etc. (Lautier, 2004). Thus, it should be added that three registers allow us to distinguish informal activities. All employed in Third World countries before the mid-1970s, the first is that of marginality: mentioned by several sociologists and economists such as (Nun, 1969; Quijano, 1971) when speaking of "marginal mass" or "marginal pole of society" in their work on Latin American countries. For supporters of this vision, individuals who are marginalized are considered delinquent because they do not have fixed housing and refuse to integrate into society. The second register is that of "underemployment".

A concept often used by economists such as (A. Lewis, 1954). This author based himself on a dualistic vision, opposing a traditional sector with the underemployment of surplus labour, to a modern sector, where he considers that the traditional sector was rural, and that he was gradually releasing its surplus labour according to the needs of the urban industry. Other economists at the time considered that workers in the traditional sector were less productive than those in the formal economy. As a result, a mass of working poor are formed in a so-called "transitional" sector, and are waiting for jobs, hence their refuge towards informality. In a famous article, entitled "d bat actuel sur les secteurs informels" (Charmes, 1987a), this economist points out that the modern sector will reject the surplus labour force, and keep only the one it needs; for the rest it will be rejected, hence the existence of the informal sector. Finally, the third register is that of poverty and the search for survival. Characteristic of the old regime, this concept was broached by many researchers as early as the early 1920s such as (Park, 1928), (Jeremerk, 1987). The poor individual was seen negatively by the other classes, and pitied them, and blamed, something that caught the attention of many experts in the 1960s in their speeches, more precisely with the outbreak of the "war on the poor" by former President Johnson. Indeed, other experts advocated for a more optimistic and positive view of the poor. J.Charmes, considers that in the face of increased unemployment, and in the absence of stable employment in the modern sector, rural migrants resort to informal activities (Charmes, 1992). Others point out that the poor are poor, because of the faults committed by the welfare state in its poor formulation of survival policies and strategies. In addition, poor living standards are another factor. Indeed, to meet their daily needs and survive, these individuals manage by any means, going as far as gathering waste to re-transform it. This optimism attracted the attention of major international institutions in the 1990s, becoming their model for alternative development (Lautier, 2004). This article provides a synthesis of current knowledge on the informal economy in developing countries. However, how to characterize the informal economy? who are its main actors? what is its magnitude? and finally, will we have to fight and eradicate informal activities and their operators, or try to integrate them into the national economy by offering legal, social, fiscal, etc. incentives? Our objective

aims to clarify the different terminologies and approaches of the informal economy, and addressed the question of its measurement, this article presents the main stylized facts on the extent of this phenomenon, as well as the different informal behaviors adopted by economic agents.

METHODS

This is a review of the literature based on a descriptive study to aim analytical of the institutional aspect of the societal scourge of informality.

Many authors have used zoological metaphors to try to define the virtual world and the concept of "informality". As a promoter of the concept of "informal", Hans Singer has been trying since the early 1970s to compare the informal sector to a "giraffe", since it is, for this author, "difficult to define according to the usual standards, but easy to recognize when you meet one" (Lubell, 1991). Lautier (1990) refers to a "unicorn" to try to compare it. Subsequently, the giraffe is turned into an elephant (Mead and Morrison, 1996), which is too large to go unnoticed, or so for the state to overcome with simple measures. (Charmes and Adair, 2014) for them, compares it to the "chameleon": "for its ability to become invisible, and to slip through the mesh of regulations. But, for sure, it's not a dinosaur, because it's not in danger of extinction! » At that time, it was certainly heard of this animal several times, but it was more and more difficult to meet it, since in reality, it did not exist. That being said, this beast was still considered spectacular and surprising for its importance and dynamism. (Charmes, 1993). To date, it has become increasingly difficult to provide a universal definition, even though renowned researchers and experts, and international institutions, are constantly trying to measure it and embed it in national accounts. This does not prevent us from drawing up an overview of the definitions given to this concept since its appearance. The notion of "informal" is not universally accepted, quite the contrary, since its emergence in the 1970s, debates around the concept of "informal sector", its origin, its causes, its link with the formal sector. 'have ceased to multiply, thus giving opinions as diverse as each other, because of its ambiguity, its multifaceted nature and finally the plurality of methodologies used to quantify informal activities that escape legal and statistical standards. Many anthropologists, sociologists, economists, international institutions, politicians, jurists, etc. use various terms to describe these behaviors. Indeed, JC Willard (1989) had identified 26 terms associated with these activities, some of which underline the criminal nature of the activity, others on its statistical invisibility, we mention them as follows: Unofficial, unregistered, unreported, hidden, submerged, underground, parallel, alternative gray, autonomous, marginal, invisible, illegal, unobserved, hidden, underwater, underground, secondary, double, occult, black, irregular, peripheral, informal, shadow, Counter-economy. (Willard, 1989). Dominant in the 1960s and 1970s (including some ILO members in the 1970s), the dualist approach has its origins in the intellectual work of Arthur Lewis (1954) and Harris-Torado (1970) on developing countries, or their economies were considered dual, due to the existence of two sectors: traditional (subsistence agriculture, handicrafts) and modern (national and international trade). This school declared the existence of a dual model of the labour market, where the informal sector is considered as a « residual component » disconnected (exogenous) from the rest of the economy. In other words, it is a subsistence sector that has its origins in labour market segmentation and the saturation of the formal sector in terms of job creation.

As a result, the informal sector constitutes among other things « the least favoured and lowest segment » of the labour market which has no link with the formal economy, quite the contrary, the latter contributes to labour market imbalances (Pasquier-Doumer, 2012). (Cling and al., 2012) had a more or less optimistic vision, stating that "with economic growth and transformation, the informal economy will ultimately be absorbed by the formal sector". In contrast, the "structuralist" school emphasizes the decentralization of production. it focuses on the interactions and interdependencies between the informal and formal sectors (Moser, 1978; Portes & alii, 1989). According to this neo-Marxist entry, the informal sector is a subordinate component of the capitalist system; which consists of small enterprises and unregistered workers, who will submit to formal enterprises in order to provide them with cheap products and labour. (Bachetta and al., 2009). In this case, the informal sector increases the flexibility and competitiveness of the economy. Concerning the delimitation of the scope of informal practices, this school sees that it was unlikely to reduce their growth, since they are closely linked to formal capitalist enterprises. However, as a result of increased globalization, formal companies use subcontracting to reduce their costs, through informal networks deemed to be the only ones able to provide the services that formal companies need (Bachetta and al., 2009). The often called "orthodox" legalistic school was developed by De Soto (1989). it considers that the informal sector is made up of micro entrepreneurs, whose central objective is to operate informally in order to avoid public regulations. In trying to decide between the two preceding schools, the legalist school claims that individuals resort to informal activities, by deliberate and non-binding choice, in order to circumvent the rules of the game, imposed by the State in terms of formal status and registration of activity (bureaucracy, corruption, wage rigidity), which are considered inefficient, and incur exorbitant costs in relation to the benefits. Finally, the illegalist school is closely linked to neoliberalism, and neoclassical economies. From this perspective, informality is seen as a way for entrepreneurs to avoid taxes and labour market regulations. Informality is therefore perceived as a choice. (BIT, 2013). In general, each of these schools of thought has its own fundamental premise. Indeed, while the dualist approach considers that the best way to eliminate informal enterprises would be through creation, and the development of formal enterprises, the structuralist approach advocates rather for better compliance with regulations. As for the legalistic approach, it advocates reducing the high costs of registration and compliance. According to (Cling and al., 2012) this step will « encourage unregistered companies to make themselves known, borrow capital, obtain more official status, which will allow them to improve their productivity, and why not start trading and grow. » Let us come back to Measuring the informal economy, which is, among other things, a major issue for economists who try to multiply the tricks in order to grasp its size and its evolution. Several methods are proposed to measure the size of this economy, which can be broken down into two main components, namely:

- The indirect approach: this is a method that mobilizes proxies, such as monetary demand, or energy consumption (Hanousek and Palda, 2006) (dynamic, etc.)

- The direct approach: this is a method that aims to enumerate the informal phenomenon through surveys, which we have detailed below:

1- MIXED SURVEYS "HOUSEHOLDS, BUSINESSES"

In an attempt to empirically measure the size of the informal economy, surveys were initially developed by researchers from the laboratory (development, institutions, globalization/DIAL), as well as researchers from the National Institute of Statistics (INS), carried out in Mexico in 1987 and then recognized internationally. Targeting two categories of actors, this survey is carried out in two phases. Based on a representative sample of informal production units, the first phase is an "increased employment/household" survey, which consists of drawing up questionnaires to obtain as much information as possible on the labour force. The objective of this step is to collect as much information as possible on invisible activities, such as ambulant work and/or homeworking, which will avoid any kind of biased indicators. (Nordman and Roubaud, 2010). The second phase is addressed to the informal entrepreneurs identified in phase 01. It seeks to identify the main economic and productive characteristics of companies, as well as their difficulties and demands. This type of survey is considered reliable, since the data collected on the informal economy are representative, compared to traditional studies conducted only on companies, which are unsuccessful and biased, since they do not take into account "invisible" such as activities and practices performed at home or ambulant trade (Roubaud, 2014).

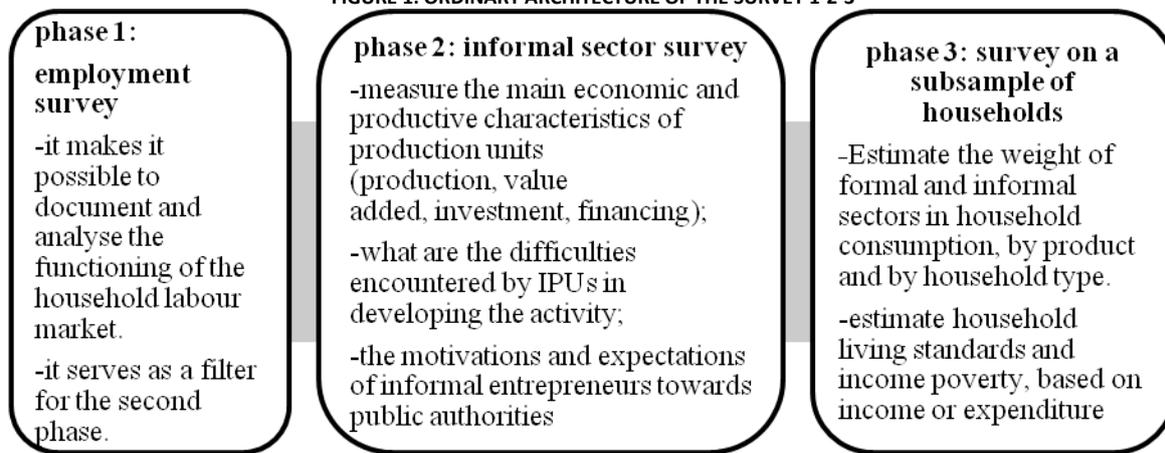
2- HOUSEHOLDS SURVEYS

In a survey conducted by Gardes and Starzec (2001), they demonstrated that the informal sector in Poland grows in times of crisis and reform, since it exposes products with lower prices on the markets. Paradoxically, De Soto (1989) demonstrated after an experiment in Peru that, the administrative burdens imposed by governments constitute a major obstacle to the development of formal entrepreneurship, quite the contrary, the bureaucracy favours informal practices to the detriment of law-abiding companies, and activates in a formal way. In addition to bureaucracy, Djankov et al (2004) found that corruption in Russia is one of the barriers to entry. In asymmetric information situations, entrepreneurs tend to avoid paying taxes and registration costs. Charmes (1990) pointed out that high unemployment rates are a source of informal practices in Egypt, hence the need for State interventionism (Attia, 2009), to deal with these harmful behaviours, which cause distortions in formal markets, thus causing a loss of trust in institutions and the law. (Nesma, 2014)

3- SURVEYS 1-2-3

Developed by DIAL researchers, and implemented in many countries. It aims to analyse the informal sector in all its forms, and its relationship with the rest of the economy, both in terms of employment and the demand and supply of informal products. Survey 1-2-3 is a system of three inseparable surveys that targets individuals, production units and households. It is an extension of mixed investigations. For more understanding, we have detailed it as follows:

FIGURE 1: ORDINARY ARCHITECTURE OF THE SURVEY 1-2-3



Source : elaborated by us, based on the works of (Nordman and Roubaud, 2010)

It should be noted that the 1-2-3 survey method has attracted the attention of a large number of country researchers. It was applied in Africa with the first achievements in Cameroon (1993), Madagascar (1995), between 2001 and 2009, cooperation was established between the INS, as well as other regional statistical institutions, the community of nations in Latin America, the Asia Pacific Commission of the United Nations in Asia. Etc. It should be added that even if this method was conceived as a general framework with a flexible structure, but unfortunately the configurations vary according to the characteristics and specificities of each country.

RESULTS AND DISCUSSION

Let us recall that the method used in this article is analytical, institutional and descriptive. Indeed, the results obtained as a result of our research, in terms of literature, have enabled us to note that nowadays, the informal economy occupies a preponderant place in society, hence the need for its measured. The International Labour Organization (ILO) published in 2012 a statistical manual on methodological issues related to surveys of the informal economy at the national level. The data extracted from this manual are extremely important, as the information and statistics related to informality are few or not numerous, due to the scarcity of surveys in many countries. According to statistics compiled by the Department of the International Labour Office (ILO), the situation of people in informal non-agricultural employment in 47 countries and territories is as follows: varies in Latin America and the Caribbean with 40% in Uruguay, to 75% in the Plurinational States of Bolivia, 33% in South Africa, to 82% in Mali, East and South Asia (excluding China), 42% in Thailand to 83.5% in India, North Africa, and the Middle East, by 30.5%. By the end of the 2000s, employment in the informal economy accounted for more than 70% of non-agricultural employment in sub-Saharan Africa, 69.7% in South and Southeast Asia, 57.7% in Latin America, 53% in North Africa and the Middle East, and 22.6% in the economies in transition. (Charmes 2009, 2012). This author estimated the share of informal employment in total non-agricultural employment in Africa at between 70 and 90%, with a self-employment rate of around 80 to 90%. As for self-employment, it represents a larger share of informal employment compared to paid employment. Indeed, it accounts for about a third of non-agricultural employment in the world, 53% of non-agricultural employment in Sub-Saharan Africa, 44% in Latin America, 32% in Asia, and 31% in North Africa. Over the past two decades, many developing countries have experienced remarkable growth rates, but this is not enough to reduce the rate of informality. The BIT's work (Bureau international du travail, Genève), (International Labor Office, Geneva) (BIT, 2015) revealed that "a large informal sector can coexist and subsist in parallel with the formal economy and strong growth. "This is the case for Latin America and the Caribbean, which experienced an average annual growth of 3.5% between 2000-2012, while according to the 2012 labor overview, informal employment in the Latin America and Caribbean region stood at 47.7% in 2011 compared to 49.9% in 2009. This being said, for the BIT (2014), « it would take up to fifty-five years to halve the informal economy ». Regarding the informal sector, it represented in Tunisia in 1980, 36% of non-agricultural employment, reaching 39% in 1989, this proportion increased from 20 to 25% in Algeria between 1977 and 1985, and from 69 to 74% in Mauritania between 1980 and 1988 (Charmes, 1993) As for the share of the informal economy in GDP in transition economies, for the period 1989-1995, it is as follows:

TABLE 1: SHARE OF THE INFORMAL ECONOMY IN THE GDP OF TRANSITION ECONOMIES, 1989-1995 (in percentage)

Countries	1989	1990	1991	1992	1993	1994	1995	Variation*
Azerbaijan	12.0	21.9	22.7	39.2	51.2	58.0	60.6	(+38.7)
Belarus	12.0	15.4	16.6	13.2	11.0	18.9	19.3	(+3.9)
Bulgaria	22.8	25.1	23.9	25.0	29.9	29.1	36.2	(+11.1)
Estonia	12.0	19.9	26.2	25.4	24.1	25.1	11.8	(-8.1)
Georgia	12.0	24.9	36.0	52.3	61.0	63.7	62.6	(+37.7)
Hungary	27.0	28.0	32.9	30.6	28.5	27.7	29.0	(+1.0)
Kazakhstan	12.0	17.0	19.7	24.9	27.2	34.1	34.3	(+17.3)
Latvia	12.0	12.8	19.0	34.3	31.0	34.2	35.3	(+22.5)
Lithuania	12.0	11.3	21.8	39.2	31.7	28.7	21.6	(+10.3)
Moldova	12.0	18.1	27.1	37.3	34.0	39.7	35.7	(+17.6)
Uzbekistan	12.0	11.4	7.8	11.7	10.1	9.5	6.5	(-4.9)
Poland	15.7	19.6	23.5	19.7	18.5	15.2	12.6	(-7.0)
Czech Republic	6.0	6.7	12.9	16.9	16.9	17.6	11.3	(+4.6)
Romania	22.3	13.7	15.7	18.0	16.4	17.4	19.1	(+5.4)
Russia	12.0	14.7	23.5	32.8	36.7	40.3	41.6	(+26.9)
Slovakia	6.0	7.7	15.1	17.6	16.2	14.6	5.8	(-1.9)
Ukraine	12.0	16.3	25.6	33.6	38.0	45.7	48.9	(+32.6)
Average	13.6	16.7	21.8	27.7	28.4	30.5	29.0	(+12.3)

* percentage decrease or increase between 1990 and 1995.

Source: European bank for reconstruction and development (EBRD), (Wladimir, 2007)

We have seen that, informal activities have been accentuated more and more in the majority of countries in transition, in particular in countries, the least reforming and controlling, to record staggering rates exceeding in most of the time 50%, as was the case in Georgia (62.6%), Ukraine (48.9%), Russia (41.6%), Azerbaijan (60.6%) (they were 12%), and this after having proceeded to the development of the transition programs., except for a few countries such as Poland (12.6%), Estonia (11%), Slovakia (5.8%) which were able to decrease their share of the non-official economy a few years later, which leads us to say that they have embarked on the path of formalizing their economies, by undertaking a set of measures to encourage individuals, control, etc. Etc. We can add in the end that the average

share of the non-official economy in all the countries in transition increased between 1989-1995, or, it was 13.6% to reach 29%, something of concern that must be taken into consideration, and must attract the attention of the governments of every country.

In order to try to give an example of informal practices, we propose to present the example of a survey carried out in Africa on three cities: Dakar, Cotonou, Ouagadougou by Benjamin and Mbaye (2012), with the central objective of characterizing the informal, and its distinction from the large and small informal. The results of this study turned out to be the same as those obtained over thirty years ago. That said, they revealed that in a context of state failures, with weak enforcement of the rules of law, corruption and low tax collection; the small informal is essential with the same structural facts, namely: a small business, self-employment, low registration, low level of education and feminization, lack of access to means of formal financing and social protection, and finally, an apparent deregulation of the labor market (Hugon, 2014). These stylized facts are in the following table:

TABLE 2: COMPARISON OF FORMAL, LARGE INFORMAL AND SMALL INFORMAL ENTERPRISES ACCORDING TO SIX CRITERIA

	Informal companies	Big informal	Small informal
Recording	Yes	Yes	No
sincerity of accounts	Yes	No	No
Fixed workstation	Yes	No	No
Access to bank credit	Yes	Yes	No
Turnover > 50 million FAFC *	Yes	Yes	No
Tax payment	Yes	No	No

Source: Benjamin, Mbaye (2012) cited in (Hugon, 2014)

(One euro = 655,957 FAFC)

*The Franc of the African financial community

Informal activities are unfortunately not practiced only by the small informal, who completely escapes state control to the detriment of formal businesses that respect the regulations; on the contrary, there are companies (Big informal) in the sense of Benjamin, Mbaye (2012), which continue the registration procedures, and have a turnover of more than 50 million FAFC, the credits of which are granted to them even if they do not have a fixed workplace, but, despite that, they use informal practices (little or unconventional) to avoid paying taxes, and not actually report their accounts. Wouldn't this discrimination cause tensions with companies that respect the law, and those that mostly or partially escape formal obligations.

This situation is not limited only to these three African countries, but to the majority of countries, whether developed or in transition, since the informal sector is deployed in all areas, thus affecting all working people, households and individuals who, by obligation or by voluntary choice practice several activities at the same time. The informal sector primarily targets the "female" class, food activities "distribution, preparation, catering", itinerant trade, male activities such as: repairs, subcontracting, recovery and recycling of industrial products, transport, processing and manufacturing, opportunistic behaviors of cheating, evasion, and circumvention of the law characteristic of the socialist economy, tax evasion and fraud, less transparent and fraudulent financial transactions, real estate speculation, corruption, and finally rent-seeking behavior. These behaviors were accentuated towards the end of the 1990s, with the emergence of privatization and financial scandals without neglecting the systemic, institutional and legal vacuum that was triggered by the transition of a country from one system to another. This institutional vacuum has prompted agents to behave with a lack of morality, and social values in all activities, and allowed them to circumvent the rules, shirk their commitments, and ultimately collect the rents by any means, including false declarations of income and assets. Defined by the EBRD as "a way to protect against the uncertainty due to the instability of rules during the transformation of the economic system" (Wladimir, 2007) corruption has also spread. Russian President Boris Yeltsin revealed in 1993 that: 40% of entrepreneurs and firms resorted to corruption. The latter had reached the highest levels in the Communities of Independent States (CIS) (Azerbaijan 5.7% of gross business income, Kyrgyzstan 5.3%, Armenia 4.6%) compared to those of Central and Eastern European Countries (CEECs) (Hungary 1.7%, Poland 1.6%), as we can see in the following table:

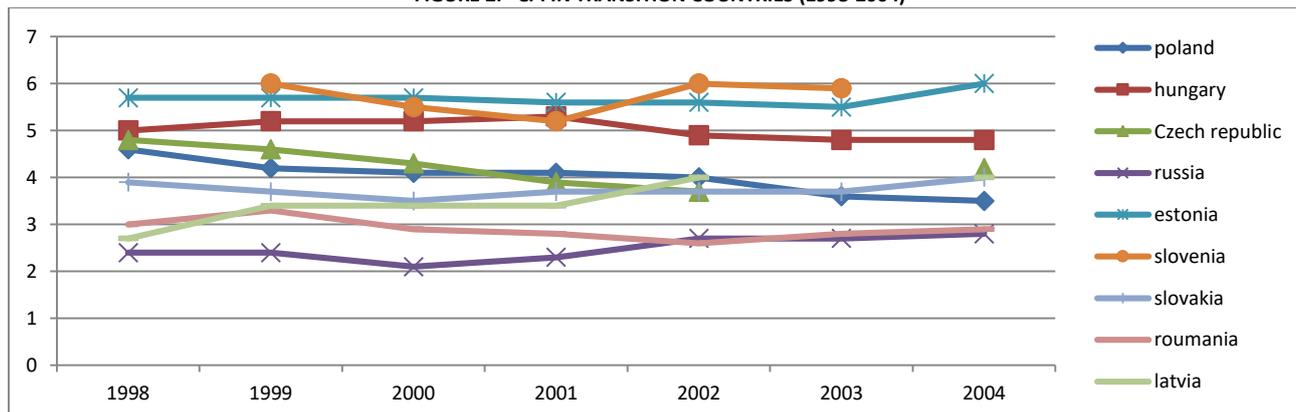
TABLE 3: AVERAGE PAYMENT OF BRIBES AS A% OF GROSS INCOME OF FIRMS

Countries	% of revenues	Countries	% of revenues
Albania	4.0	Kyrgyzstan	5.3
Armenia	4.6	Latvia	1.4
Azerbaijan	5.7	Lithuania	2.8
Belarus	1.3	Moldova	4.0
Bulgaria	2.1	Poland	1.6
Croatia	1.1	Romania	3.2
Czech Republic	2.5	Russia	2.8
Estonia	1.6	Slovakia	2.5
Georgia	4.3	Slovenia	1.4
Hungary	1.7	Ukraine	4.4
Kazakhstan	3.1	Uzbekistan	4.4

Source: (Hellman and al., 2000)

Corruption has also spread and constitute, among other things, a kind of private tax. This is the case of a judge who asks to monetize a court decision so that it can be changed, for example, or of a banker who asks for bribes in exchange for a bank credit agreement, because of its bureaucracy, the entrepreneurs are forced to submit to this new informal rules of the game. Finally, to understand the extent of corruption in countries in transition, we used the corruption perception index (CPI). we schematize it as follows:

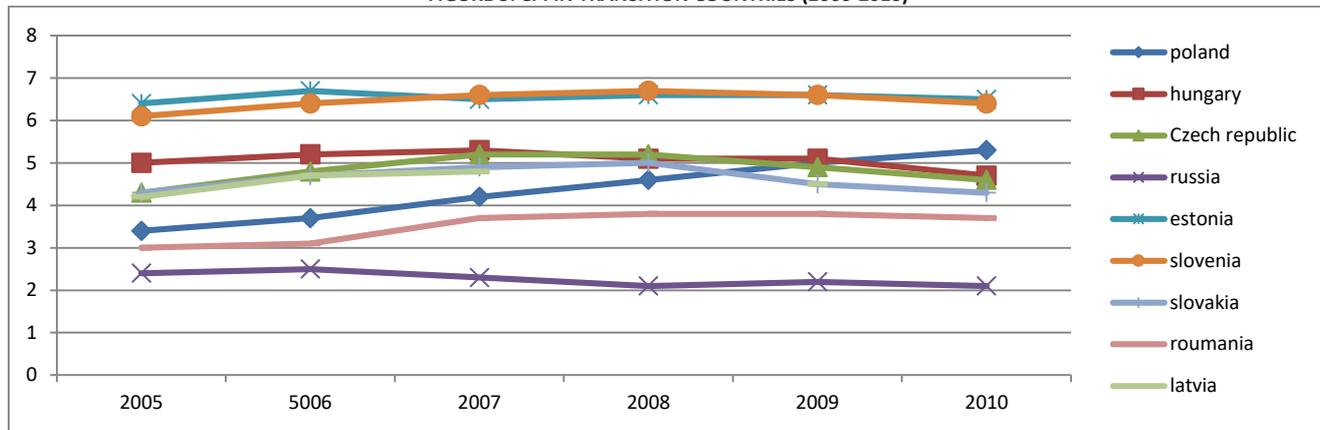
FIGURE 2: *CPI IN TRANSITION COUNTRIES (1998-2004)



Source: Non-governmental organization data and archives (Transparency international) (Transparency-international, 2019)

*CPI is an index of the perception of corruption created by the NGO Transparency International in 1995 and takes a value from 0 (corrupt) to 10 (Clean)

FIGURE 3: CPI IN TRANSITION COUNTRIES (2006-2010)



Source: Non-governmental organization data and archives (Transparency international) (Transparency-international, 2019)

These two graphs allow us to notice, that corruption was even lower in the most reforming countries like Poland, Slovenia and Estonia, and stronger in countries still characterized by a planned and concentrated economy. (Russia, Romania for example). These two graphs allow us to notice, that corruption was even lower in the more reformist countries like Poland, Slovenia and Estonia, and stronger in countries still characterized by a planned and concentrated economy. (Russia, Romania for example). Henni A (1988) tries to explain the strong dynamism of informality which allows "black" activities: from the small cigarette merchant to illegal practices to proliferate, through tax evasion and fraud, the stomach without bill, the belly of counterfeit products, etc. As such, he rereads the proliferation of these behaviors at a certain level of state interventionism within these countries. For this author, countries which have resorted to a set of strategies aimed at development, were based on strong State interventionism, which exercises its monopoly over: resources, scale of production, investment, consumption and savings; and finally on the birth of a great industry; something that may run counter to the goals of social actors. He points out to this end that "the informal arises from the mismatch between global central strategies, and the strategies of social actors seeking to maximize their short-term benefits through a different circulation of goods and money. (Henni, 1992). He then uses the accumulation process to try to explain the emergence of informal practices. Thus, a country with the objective of improving its growth rate, will be based on maximizing the rate of accumulation of investment (I) from which results the mass of employment, compared to the national income (Y) which will subsequently determine the consumption rate (C) and wages. To maximize their profits, individuals would seek to modify their wages so that their actual consumption is different from planned consumption, and this so that the investment that arises from these consumptions is different than the investment (I) foreseen by the planning. The objective of the social actors through this is that the sharing between the (I-C) which actually takes place is different from the sharing (I-C) foreseen by the planning, hence the emergence of shortages, disturbances, etc. In general, A.Henni (1992) asserts that the birth of the "informal or parallel economy" is largely associated with the fact that the planned I-C arbitration does not change, to conform to the I-C sharing operated by social actors. In this regard, it is no longer a question of speaking in terms of modern behavior / traditional behavior, or actors activating in the formal, and others in the informal. (Henni, 1992) notes in this connection that "There is no part of society living from the formal sector and another living from the informal sector, with customs duties to pass from one to the other. Anyone can have both modern / traditional behaviors simultaneously. He does not need for that to declare each time in front of the counter of the reason that he passes from one to the other or that he has both." For this author, the informal can be understood in different ways, namely:

- Anything that does not meet the canons of the representation of a given practice, in other words, anything that is foreign to the original practice of the legitimate representation of legitimized practices is excluded from the formal;
- The informal is the failure of a reason wishing to be totalizing without being able to be so. It would be what this reason does not allow;
- He is what escapes state organism;
- It is nothing other than modern in the eyes of many citizens.

This is how he incorporated an important variable, the "state" as an organ in political science.

He then attempts to explain the importance of this organ in the production of representations necessary for the work of the economist. However, this State will force the major macroeconomic balances to be conceived, as is the case for the production process, where the State will organize the procedures to demonstrate the reality in terms of: labor code, declaration of machines and men, declaration of qualifications, working time, income, taxes, insurance, censuses, social security, labor inspection and 'hygiene. In short, the state will give the economist the building materials for his representations. In addition, in the event that these elements are not available, or are different and are not the expectations of social actors, "domestic, black, informal" work will replace formal and legal work. (Henni, 1992). This is what leads us to rethink the essential role of a strong state endowed with a mechanism for executing contracts and respecting the rules, articulated around well-designed macroeconomic policies, while fighting against bureaucracy, corruption, tax evasion, social support and the discriminatory costs of the informal economy, and finally, the development of healthy institutions (rules, laws understandable by all to avoid the risk of circumvention) and improve the business climate.

RECOMMENDATIONS

Indeed, in an attempt to reduce these practices, the State must intervene to ensure the proper functioning of an economy as follows:

It must not behave with his productive assets (companies) like machines that can be sold once defective, as he had done by auctioning them, or even distributing them for free to the population while they are sources of income and a place of work for the majority of the population. - It must allocate a good part of its expenditure to the development and strengthening and, finally, the stability of institutions and not to the subsidization of non-competitive activities, according to (Wladimir, 2007) "the problem of the transition is not so much to reduce state expenditure as to improve its allocation and efficiency; in other words, the size of government is therefore less important than the quality of its policy. - The biggest challenge of the state is clear, it is that of rationalizing, adjusting and formalizing the new institutions and finally correcting / modifying or reforming the legal, financial, tax system permanently while ensuring a fair distribution of income, and carrying out an institutional construction which is the priority of the transformation so that the strategy is successful by creating a transparent, predictable, stable framework endowed with mechanisms of execution of contracts (to ensure respect for property rights and institutions, rights on bankruptcies, layoffs, developing a safety net and social protection, rights for retirees, the unemployed, etc.) articulated around well-designed macroeconomic policies and efficient institutions and competent organizations and experts who will collect resources, exercise control, and who must prioritize the rule of law, defined by an absence of random power, stability and credibility of rules to solve, for example, problems that are not generally included in economics textbooks or predictable elsewhere and to try to deal with the illegal and informal practices of agents while improving its public governance and collaborating with organizations, which must also follow the principles and practices of corporate governance.

CONCLUSION

The spread of the informal economy in any country is a global phenomenon that cannot be understood in a mono-disciplinary way, quite the contrary, it brings together several dimensions namely: institutional, political, economic, moral, socio-cultural, ecological, technical, legal, psychological, historical, etc., to avoid the

risk of its denaturalization by an overly abstract approach. Its analysis is therefore intended to be comprehensive and systemic. In times of crisis, recession, the informal economy is the only one capable of providing support to the poorest, providing them with jobs and income. It is the means by which individuals can achieve their goals such as poverty, hunger, women's empowerment, gender equality, etc. These informal behaviors that economic agents adopt are the result of their beliefs, mental models, and perceptions of the world around them. Thus, in recent years, the circumvention of the law and the practice of informal activities such as: tax evasion, sales without invoice, counterfeiting, the use of cash instead of checks, corruption; have become "the social norm par excellence", which dominates the economic and social sphere. Rather than promoting the new economic and social organization based on the principles of contract and law, economic agents rather prefer to submit to informal rules, or to disappear due to unfair competition. Over time, with the multiplicity of crises, and under the effect of globalization, governments have realized the vital role of this economy, especially for the most vulnerable. For this they have resorted to policies allowing them to take charge of this economy, to become more productive, and improve the quality of life of those who depend on it by increasing their income, the creation of a healthy institutional base, and a business climate conducive to the development of private initiative because in the case where the planning rules meet the needs expressed by social actors in informal markets, informal practices will decrease.

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DETERMINANTS OF DAIRYING: A CASE STUDY OF BALASORE AND KORAPUT DISTRICTS OF ODISHA**ARAKSHIT PATRA****RESEARCH ASST.****NABAKRUSHNA CHOUDHURY CENTRE FOR DEVELOPMENT STUDIES****CHANDRASEKHARPUR****ABSTRACT**

Dairying animal and dairy products are the gift of nature. Our forge is to manage it properly. Dairy animal is the source of sustainable income if we take proper care of with providing green fodder, dry fodder, concentrates, adoptable shed (air, water, temperature), support from government (financial, physical and preventive measure). Dairy and dairy product is supportive income to family income and livestock is support to agricultural production. Income from this sector not only support to sustainable income of family, it acts as the insurance of rural family. If the above discussed points fail, then the sector becomes weak and not able to generate sustainable income. Rural families are not such economical sound by which they can rejuvenate their farm or individual unit. So, the researchers have attempted to find out the determinants and what would be the suggestive measures to overcome the determinant factors in the present paper.

KEYWORDS

dairy, determinants, sustainable income.

JEL CODE

Q29

INTRODUCTION

Dairy production system, however, is undergoing a change owing to several economic and technological forces. With technological progress in agriculture and improvements in economic conditions in rural areas, the non-food functions of animals are declining importance. Animals, now, are viewed more as a source of food and nutrition. The demand for animal-based foods has been increasing fast due to increase in per capita income and rise in urbanization. These forces have given a commercialization orientation to dairy production. Besides, the dairy production is under economic pressure to augment income of the producer's particularly small landholders for whom crop production alone cannot provide a sustainable livelihood because of increasing sub-division of land holdings.

India's livestock sector is one of the largest in the world. It has 56.7% of World's buffaloes, 12.5% cattle, 20.4% small ruminants, 2.4% camel, 1.4% equine, 1.5% pigs and 3.1% poultry. In 2010-11 livestock generated outputs worth Rs. 2075 billion (at 2004-05 prices) which comprised 4% of the GDP and 26% of the agricultural GDP. The total output worth was higher than the value of food grains. India has vast resource of livestock and poultry, which pay a vital role in improving the socio-economic conditions of rural masses. There are about 300.00 million bovines, 65.07 million sheep, and 135.2 million goats per 19th Livestock Census in the country. Owing to conducive climate and topography, Animal Husbandry, Dairying and Fisheries sectors have played prominent socioeconomic role in India. Traditional, cultural and religious beliefs have also been contributing in the continuance of these activities. They further play a significant role in generating gainful employment in the rural sector, particularly among the landless, small and marginal farmers and women, besides providing cheap and nutritious food to the millions of people.

OBJECTIVES

1. To examine the factors for the determinants of dairying.
2. To suggest measure for dairying determinant factors.
3. To evaluate the constraints and efficacy of IDDP scheme.

MATERIALS AND METHOD

To shape the objectives of paper, researchers have proposed two districts such as Balasore and Koraput. On the basis regional, Balasore is selected from coastal zone and Koraput selected from hilly zone. Another criterion for the impact of IDDP scheme, Balasore is selected from non-KBK zone and Koraput is selected from KBK zone. Member and non-member households of IDDP scheme are selected from each block and district to bring clarity in data compilation and result orientation. For better result, Cobb-Douglas production function model, multiple regression, T-statistics, standard deviation, mean and average methods have adopted in this paper to determine the determinants of dairying in study area which will be the instance of the state.

SAMPLE SELECTION**(1) Selection of Districts**

Two extreme districts-Koraput & Balasore are selected with the consultation of Animal Resource Development Department in the state and adopting the following procedure. So far IDDP has covered 25 districts of the state with 100% grant in aid from the Central Govt. The project period initiated from the year 1993-94 and has been continuing as such with the motto of developing dairy in low milk potential areas. Out of the 25 districts covered, 5 districts such as Bolangir, Kalahandi, Koraput, Balasore and Mayurbhanja have utilized central funds 3 times in 3 different phases. Since the paper belongs to assess the determinants of dairy on socio-economic livelihood of the farmers, it is considered as strategic instrument to alleviate poverty. All these 5 districts were divided into 2 parts, one is KBK comprising of Koraput, Bolangir and Kalahandi and the other part non-KBK comprising of Balasore and Mayurbhanja. Two districts are selected at random from both the sections. Accordingly, Balasore and Koraput districts were selected. It provided an alternative avenue to study where the project is closed and the other district Koraput where it is ongoing.

(2) Selection of Blocks and Villages

In each selected districts, two blocks are selected at random considering the distance from the district dairy plant. In the selection procedure, one block was selected, which is close to district dairy plant and another block, which is far from district dairy plants are considered. In Koraput district, Boriguma block selected as close to district dairy plant and Semiliguda relatively distant are considered. Similarly, in Balasore district, Bhogarai block was selected as close to district dairy plant and Bahanaga a relatively distant block from the district dairy plant are chosen purposively for the study with the consultation of CDVOs and G. M. Milk Unions of the concerned districts.

Four villages selected from each block, selection of each village considering with IDDP member households and IDDP Non-member households. Villages are selected with consultation of Milk Producer Co-operative Societies (MPCs) under their milk route. Selected villages are shown in Table 1

(3) Selection of Respondents

In the selection of respondents (IDDP member households and IDDP non-member households), all cares have taken with consultation of village people as no one to be left from enumeration list and categorically member and non-member households of IDDP Scheme.

(i) **Selection of member households:** All IDDP members were grouped into four strata of equal number after arranging them in ascending order according to the number of dairy cattle possessed by them. Then one member is selected from every four members at a random. Thus, 406 members were selected as sample.

(ii) Selection of non-member households: All Non IDDP members with dairy cattle of the same village were grouped into a stratum and selected one member from each four members/ Households randomly. Thus, 251 members were selected as sample (Table 1).

TABLE 1: SELECTIONS OF SAMPLE HOUSEHOLDS

Particulars		Total Households	Dairy Households	IDDP Households	Non-IDDP Households	Total	
Koraput]Boriguma	Kathargada	356	224	20	36	56
		Podapadar	672	280	20	50	70
	Semiliguda	Mathalput	2519	200	20	30	50
		Sunabeda	768	548	37	100	137
Balasore	Baghorai	Katisahi	401	284	61	10	71
		Hartasorisha	500	396	94	5	99
	Bahanaga	Brajadeuli	319	300	65	10	75
		Talakurinia	494	396	89	10	99
Total		6029	2628	406	251	657	

RESULTS AND DISCUSSIONS

To find the constraints in dairy development, Sale proceeds and operating cost and determinants of dairying have discussed in the following analysis.

SALE PROCEED AND OPERATING COST

TABLE 2: PER MILCH ANIMAL SALE PROCEEDS AND OPERATING COST OF SAMPLE MEMBER HOUSEHOLDS IN KORAPUT AND BALASORE DISTRICTS

Sl. No.	Type of Milch Animals	Member Households in Koraput		Member Households in Balasore	
		Sale Proceeds	Operating Expenses	Sale Proceeds	Operating Expenses
1	Indigenous Cows				
	Per Annum(Rs.)	9563	3309	9640	3538
	Per Day (Rs.)	26.20	9.07	26.41	9.69
2	Crossbreed Cows				
	Per Annum(Rs.)	35558	15898	43906	21297
	Per Day (Rs.)	97.42	43.56	120.29	58.35
3	Buffaloes				
	Per Annum(Rs.)	51385	21843	52837	23286
	Per Day (Rs.)	140.78	59.84	144.76	63.80

Source: Sample survey - 2012.

It is revealed from the above Table and Figure that per day sale proceeds and operating expenses for indigenous cows are estimated at Rs. 26.20 and Rs. 9.07 respectively in Koraput district. Thus, net-income per indigenous cows is found at Rs. 17.13. This figure is further higher in Balasore district, where sale proceeds and operating expenses per milch animals are Rs. 26.41 and Rs. 9.69 respectively. Hence, the net income per indigenous cow is found to be Rs. 16.72. As against the sale proceeds and operating expenses towards a crossbreed cow daily in Koraput district, it is found to be Rs. 97.42 and Rs. 43.56 respectively. Hence, the daily net income from a crossbreed cow in Koraput district comes out as Rs. 53.86. Similarly, daily sale proceeds and operating expenses towards a crossbreed cow in Balasore district has been estimated as Rs. 120.29 and Rs. 58.35. Therefore, daily net income from a crossbreed cow in Balasore district may be Rs. 61.94. Proceeding in the same vein, the daily sale proceeds and operating expenses on a buffalo of Koraput district is Rs. 140.78 and Rs. 59.84 respectively. The same for a buffalo in Balasore is Rs. 144.76 and Rs. 63.80 correspondingly. For buffaloes the net income per day is calculated at Rs. 80.94 in Koraput and Rs. 80.96 in Balasore.

DETERMINANTS OF DAIRYING

For analyzing the determinants of dairying among the sample households, the production function analysis has been used as analytical tool. Linear Cobb-Douglas production function has been used to express the relationship between milk output per animal and various factors influencing it. The study has been conducted in two districts (Balasore and Koraput) of Odisha. The milk and its products are sold in uniform price all over the state by OMFED and other private agencies. Hence, the income from dairy is directly proportional to the milk production. Obviously the factors mostly responsible for the milk production are green fodder, dry fodder, concentrates and labour. This propels for establishing the mathematical relationship among these variables in the form of linear production function as

$$Y = f(X_1, X_2, X_3, X_4) \tag{1.1}$$

This may be more elaborately mentioned as

$$Y = C + \alpha_1 \cdot X_1 + \alpha_2 \cdot X_2 + \alpha_3 \cdot X_3 + \alpha_4 \cdot X_4 \tag{1.2}$$

Where

Y = Daily Average Milk Yield (in litres)

C= Regression Constant

X₁= Quantity of Green Fodder Fed Daily (in Kg)

α₁= Regression coefficient of X₁

X₂= Quantity of Dry Fodder Fed Daily (in Kg)

α₂= Regression coefficient of X₂

X₃= Quantity of Concentrates Fed Daily (in Kg)

α₃= Regression coefficient of X₃

X₄= Quantum of Daily Human Labour (in Min)

α₄= Regression coefficient of X₄

The coefficients mentioned in the following tables which has been estimated with the help of linear multiple regression model. This is applicable for non-IDDP beneficiaries, IDDP beneficiaries and both of Koraput and Balasore districts along with pooled sample. By this the mathematical relationship as well as quantum of influence of the independent variables over dependents can be investigated in every segment of the collected sample. The average daily milk yield, feed intake and human labour of Balasore and Koraput districts have been analysed by the use of Cobb-Douglas form of production function.

From above Table it is observed that the daily average milk yields in case of non-members and members of Koraput district are 3.16 and 8.37 litres respectively. The average milk yield of Koraput district has been 5.69 litres daily. Similarly, the daily average milk yields in case of non-members and members of Balasore district are 3.32 and 9.29 litres respectively. The average milk yield of Balasore district has been 6.18 litres daily. In consideration of green fodders data, it is observed that non-members and members of Koraput district have fed 4.17 and 6.32 kg daily with total average of 5.29 kg. Similarly, the non-members and members of Balasore district have fed 4.58 and 5.12 kg respectively of green fodder daily. Similar trend is also observed in case of quantity of dry fodders feed to milch animals daily. Accordingly, non-members and members of Koraput district have fed 3.73 and 5.98 kg of dry fodder daily with total average of 4.57 kg to each milch animal. Similarly, the non-members and members of Balasore district have fed 5.25 and 7.32 kg respectively of dry fodder daily. Further, non-members and members of Koraput district have fed 2.51 and 4.78 kg of concentrates daily with total average of 3.84 kg per milch animal. Similarly, the non-members and members of Balasore district have fed 2.76 and 5.13 kg respectively of concentrates daily. In consideration of human labour, non-members and members of

Koraput district have spent 102 and 155 minutes daily with total average of 136 minutes per milch animal. Similarly, the non-members and members of Balasore district have spent 82 and 142 minutes respectively daily per milch animal.

To investigate the variations in milk yield per milch animal of Balasore and Koraput districts, respondents from IDDP members and non-members, paired t-test has been applied over the collected data. The results obtained have been presented in the following Table.

TABLE 3: T-TEST ON MEAN MILK YIELD PER MILCH ANIMAL OF SAMPLE HOUSEHOLDS OF KORAPUT AND BALASORE DISTRICTS

Indicator	Koraput		Balasore	
	Non-Member	Member	Non-Member	Member
Mean Milk yield (lit.)	3.16	8.37	3.32	9.29
Std. Dev.	0.48	0.27	0.37	0.23
No of Animals (N)	53	102	11	283
Calculated t-value	86.534*		82.255*	
Degrees of Freedom	153		292	

Source: Sample survey - 2012.

*- Significant at 5% level (P<0.05)

The calculated t-value between mean milk yield per milch animal of non-member and members of IDDP belonging to Koraput district is 86.534. This is significant at 5% level (P<0.05) for DF = 153. This establishes the fact that the average milk yield of IDDP members is significantly higher than that of non-members of Koraput district. Similarly, the calculated t-value between mean milk yield per milch animal of non-member and members of IDDP belonging to Balasore district is 82.255. This is significant at 5% level (P<0.05) for DF = 292. This establishes the fact that the average milk yield of IDDP members is significantly higher than that of non-members of Balasore district.

TABLE 4: MULTIPLE REGRESSIONS ON AVERAGE DAILY MILK YIELD (Y), GREEN FODDER (X₁), DRY FODDER (X₂), CONCENTRATES (X₃) AND HUMAN LABOUR (X₄) PER MILCH ANIMAL OF NON-IDDP MEMBERS OF KORAPUT DISTRICT

	Coefficients	t-value
Constant	1.514	1.343
Green Fodder Fed (Kg)	0.076	4.452*
Dry Fodder Fed (Kg)	0.183	2.838 ^{NS}
Concentrates (Kg)	0.163	5.430*
Human Labour Used (Min.)	0.023	0.616 ^{NS}

Source: Sample survey - 2012.

N.B.- r² = 0.79, *- Significant at 5% level (P<0.05), NS- Not Significant at 5% level (P>0.05)

The Table 4 above presents the results obtained on application of linear multiple regressions to the collected data on milk yield (litres), green fodder (kg), dry fodder (kg), concentrates (kg) and human labour (min) from non-member respondents of Koraput district. Here milk yield (Y) has been taken as dependent with green fodder (X₁), dry fodder (X₂), concentrates (X₃) and human labour (X₄) per milch animal are independents in multiple regression models. The r² value (0.79) indicates 79% data has been explained in this regression and thereby the regression is acceptable. The estimated coefficients of green fodder, dry fodder, concentrates and human labour are 0.076, 0.183, 0.163 and 0.023 respectively. The corresponding t-values are 4.452, 2.838, 5.430 and 0.616 out of which t-values against concentrates (5.430) and green fodder (4.452) are significant at 5% level. Hence, the supply of concentrates and green fodder mostly influence the increase in milk production in case of milch animals of non-members of Koraput district. Further, use of dry fodder and human labour do not have much influence over the milk production as t-values against them are not significant. Accordingly, the approximated production function in this case will be

$$Y = 1.514 + 0.076.X_1 + 0.183.X_2 + 0.163.X_3 + 0.023.X_4$$

TABLE 5: MULTIPLE REGRESSIONS ON AVERAGE DAILY MILK YIELD (Y), GREEN FODDER (X₁), DRY FODDER (X₂), CONCENTRATES (X₃) AND HUMAN LABOUR (X₄) PER MILCH ANIMAL OF IDDP MEMBERS OF KORAPUT DISTRICT

	Coefficients	t-value
Constant	1.142	1.181
Green Fodder Fed (Kg)	0.096	5.121*
Dry Fodder Fed (Kg)	0.064	2.183 ^{NS}
Concentrates (Kg)	0.484	5.843*
Human Labour Used (Min.)	0.029	0.601 ^{NS}

Source: Sample survey, 2012.

N.B.- r² = 0.81, *- Significant at 5% level (P<0.05), NS- Not Significant at 5% level (P>0.05)

The Table 5 above presents the results obtained on application of linear multiple regressions to the collected data on milk yield (litres), green fodder (kg), dry fodder (kg), concentrates (kg) and human labour (min) from member respondents of Koraput district. Here milk yield (Y) has been taken as dependent with green fodder (X₁), dry fodder (X₂), concentrates (X₃) and human labour (X₄) per milch animal are independents in multiple regression model. The r² value (0.81) indicates 81% data has been explained in this regression and thereby the regression is acceptable. The estimated coefficients of green fodder, dry fodder, concentrates and human labour are 0.096, 0.064, 0.484 and 0.029 respectively. The corresponding t-values are 5.121, 2.183, 5.843 and 0.601 out of which t-values against concentrates (5.843) and green fodder (5.121) are significant at 5% level. Hence, the supply of concentrates and green fodder mostly influence the increase in milk production in case of milch animals of members of Koraput district. Further, use of dry fodder and human labour do not have much influence over the milk production as t-values against them are not significant. Accordingly, the approximated production function in this case will be as per following:

$$Y = 1.142 + 0.096.X_1 + 0.064.X_2 + 0.484.X_3 + 0.029.X_4$$

TABLE 6: MULTIPLE REGRESSIONS ON AVERAGE DAILY MILK YIELD (Y), GREEN FODDER (X₁), DRY FODDER (X₂), CONCENTRATES (X₃) AND HUMAN LABOUR (X₄) PER MILCH ANIMAL OF SAMPLE HOUSEHOLDS OF KORAPUT DISTRICT

	Coefficients	t-value
Constant	1.224	1.282
Green Fodder Fed (Kg)	0.082	4.872*
Dry Fodder Fed (Kg)	0.059	2.436 ^{NS}
Concentrates (Kg)	0.363	5.329*
Human Labour Used (Min.)	0.026	0.589 ^{NS}

Source: Sample survey, 2012.

N.B.- r² = 0.76, *- Significant at 5% level (P<0.05), NS- Not Significant at 5% level (P>0.05)

The Table 6 above presents the results obtained on application of linear multiple regressions to the collected data on milk yield (litres), green fodder (kg), dry fodder (kg), concentrates (kg) and human labour (min) from sample respondents of Koraput district. Here milk yield (Y) has been taken as dependent with green fodder (X₁), dry fodder (X₂), concentrates (X₃) and human labour (X₄) per milch animal are independents in multiple regression models. The r² value (0.76) indicates

76% data has been explained in this regression and thereby the regression is acceptable. The estimated coefficients of green fodder, dry fodder, concentrates and human labour are 0.082, 0.059, 0.363 and 0.026 respectively. The corresponding t-values are 4.872, 2.436, 5.329 and 0.589 out of which t-values against concentrates (5.329) and green fodder (4.872) are significant at 5% level. Hence, the supply of concentrates and green fodder mostly influence the increase in milk production in case of milch animals of sample households of Koraput district. Further, use of dry fodder and human labour do not have much influence over the milk production as t-values against them are not significant. Accordingly, the approximated production function in this case will be as per following:

$$Y = 1.224 + 0.082 X_1 + 0.059 X_2 + 0.363 X_3 + 0.026 X_4$$

TABLE 7: MULTIPLE REGRESSIONS ON AVERAGE DAILY MILK YIELD (Y), GREEN FODDER (X₁), DRY FODDER (X₂), CONCENTRATES (X₃) AND HUMAN LABOUR (X₄) PER MILCH ANIMAL OF NON-IDDP MEMBERS OF BALASORE DISTRICT

	Coefficients	t-value
Constant	0.912	1.008
Green Fodder Fed (Kg)	0.062	4.891*
Dry Fodder Fed (Kg)	0.047	2.143 ^{NS}
Concentrates (Kg)	0.233	5.279*
Human Labour Used (Min.)	0.021	0.623 ^{NS}

Source: Sample survey, 2012.

N.B.- r² = 0.76, *- Significant at 5% level (P<0.05), NS- Not Significant at 5% level (P>0.05)

The Table 7 above presents the results obtained on application of linear multiple regressions to the collected data on milk yield (litres), green fodder (kg), dry fodder (kg), concentrates (kg) and human labour (min) from non-member respondents of Balasore district. Here milk yield (Y) has been taken as dependent with green fodder (X₁), dry fodder (X₂), concentrates (X₃) and human labour (X₄) per milch animal are independents in multiple regression models. The r² value (0.76) indicates 76% data has been explained in this regression and thereby the regression is acceptable. The estimated coefficients of green fodder, dry fodder, concentrates and human labour are 0.062, 0.047, 0.233 and 0.021 respectively. The corresponding t-values are 4.891, 2.143, 5.279 and 0.623 out of which t-values against concentrates (5.279) and green fodder (4.891) are significant at 5% level. Hence, the supply of concentrates and green fodder mostly influence the increase in milk production in case of milch animals of non-members of Koraput district. Further, use of dry fodder and human labour do not have much influence over the milk production as t-values against them are not significant. Accordingly, the approximated production function in this case will be as per following:

$$Y = 0.912 + 0.062 X_1 + 0.047 X_2 + 0.233 X_3 + 0.021 X_4$$

TABLE 8: MULTIPLE REGRESSIONS ON AVERAGE DAILY MILK YIELD (Y), GREEN FODDER (X₁), DRY FODDER (X₂), CONCENTRATES (X₃) AND HUMAN LABOUR (X₄) PER MILCH ANIMAL OF IDDP MEMBERS OF BALASORE DISTRICT

	Coefficients	t-value
Constant	1.429	1.291
Green Fodder Fed (Kg)	0.094	5.691*
Dry Fodder Fed (Kg)	0.086	2.794 ^{NS}
Concentrates (Kg)	0.541	8.371*
Human Labour Used (Min.)	0.029	0.863 ^{NS}

Source: Sample survey, 2012.

N.B.- r² = 0.84, *- Significant at 5% level (P<0.05), NS- Not Significant at 5% level (P>0.05)

The Table 8 above presents the results obtained on application of linear multiple regressions to the collected data on milk yield (litres), green fodder (kg), dry fodder (kg), concentrates (kg) and human labour (min) from member respondents of Balasore district. Here milk yield (Y) has been taken as dependent with green fodder (X₁), dry fodder (X₂), concentrates (X₃) and human labour (X₄) per milch animal are independents in multiple regression models. The r² value (0.84) indicates 84% data has been explained in this regression and thereby the regression is acceptable. The estimated coefficients of green fodder, dry fodder, concentrates and human labour are 0.094, 0.086, 0.541 and 0.029 respectively. The corresponding t-values are 5.691, 2.794, 8.371 and 0.863 out of which t-values against concentrates (5.691) and green fodder (8.371) are significant at 5% level. Hence, the supply of concentrates and green fodder mostly influence the increase in milk production in case of milch animals of members of Balasore district. Further, use of dry fodder and human labour do not have much influence over the milk production as t-values against them are not significant. Accordingly, the approximated production function in this case will be as per following:

$$Y = 1.429 + 0.094 X_1 + 0.086 X_2 + 0.541 X_3 + 0.029 X_4$$

TABLE 9: MULTIPLE REGRESSIONS ON AVERAGE DAILY MILK YIELD (Y), GREEN FODDER (X₁), DRY FODDER (X₂), CONCENTRATES (X₃) AND HUMAN LABOUR (X₄) PER MILCH ANIMAL OF SAMPLE HOUSEHOLDS OF BALASORE DISTRICT

	Coefficients	t-value
Constant	1.119	1.001
Green Fodder Fed (Kg)	0.072	5.167*
Dry Fodder Fed (Kg)	0.067	2.141 ^{NS}
Concentrates (Kg)	0.354	6.401*
Human Labour Used (Min.)	0.026	0.631 ^{NS}

Source: Sample survey, 2012.

N.B.- r² = 0.78, *- Significant at 5% level (P<0.05), NS- Not Significant at 5% level (P>0.05)

The Table 9 above presents the results obtained on application of linear multiple regressions to the collected data on milk yield (litres), green fodder (kg), dry fodder (kg), concentrates (kg) and human labour (min) from sample respondents of Balasore district. Here milk yield (Y) has been taken as dependent with green fodder (X₁), dry fodder (X₂), concentrates (X₃) and human labour (X₄) per milch animal are independents in multiple regression model. The r² value (0.78) indicates 78% data has been explained in this regression and thereby the regression is acceptable. The estimated coefficients of green fodder, dry fodder, concentrates and human labour are 0.072, 0.067, 0.354 and 0.026 respectively. The corresponding t-values are 5.167, 2.141, 6.401 and 0.631 out of which t-values against concentrates (5.167) and green fodder (6.401) are significant at 5% level. Hence, the supply of concentrates and green fodder mostly influence the increase in milk production in case of milch animals of sample households of Balasore district. Further, use of dry fodder and human labour do not have much influence over the milk production as t-values against them are not significant. Accordingly, the approximated production function in this case will be as per following:

$$Y = 1.119 + 0.072 X_1 + 0.067 X_2 + 0.354 X_3 + 0.026 X_4$$

These equations are solved to determine the magnitude of inputs which maximize milk yield under the restraint set out above.

CONSTRAINTS IN DAIRY DEVELOPMENT

The important constraints as perceived by dairy households are high cost of commercial feed and low price for milk. Although there has been upward revision of milk prices recently, the increase in the price of milk is not commensurate with the increase in the feed prices. In fact, the ratio of fodder price and milk price are increasing over the years which itself is a big disincentive for the farmers to continue in dairy activity. Employment and feed intake on the member group as compared to the non-member group obviously demonstrate the wholesome impact of the IDDP on these parameters in the study area.

It is proved that there are some constraints in dairy development as the feed and fodder have decreased year to year, pasture land is decreasing due to urbanization. Researcher has used Cobb-Douglas method, co-efficient and regression method to justify the determinants of dairy development in study area. It has also proved the hypothesis that IDDP scheme has great potential from the point of employment and generation of income. It is noticed that IDDP members are generating sustainable income which has crossed the BPL line and per day income from IDDP scheme is extremely higher than Government approved wage rate and estimated per day per capita consumption.

It is revealed that the supply of concentrates and green fodders mostly influence the increase in milk production in case of milch animals of member households, non-member households and all sample households of Koraput and Balasore. Further, use of dry fodder and human labour do not have much influence over the milk production. All such are also available plentifully in rural sectors.

Production of milk is directly proportional to income of the beneficiaries. Both the concentrates and green fodders are significant in all cases of member households and non-member households. More income leads to more investment and changes in livelihood. It may be envisaged that the income trend is in rising trend. More elaborately, as the investment increases, the income increases accordingly. In other words, the more the investment, the more will be income on adoption of IDDP scheme. Obviously, IDDP may be an important factor for a better alternative income as well as poverty eradication in addition to providing employment.

IDDP promotes milk production by providing support and subsidy in concentrates to the members only. The non-members are to purchase it from the market with high cost. Besides veterinary services, supply of Azola, deworming medicine, vaccine, fodder seed, fodder root slips, training programs, induce the members to produce more and sale more, which is intrinsic in augmentation of milk production in the study areas.

Time to time Govt. escalates the price of milk keeping in view about the cost factors involved in production by the producers. However, ensured market by IDDP funded federation, transportation of milk from the producers to plants, chilling plants for storing of the perishable product and its linkage to urban markets attract the producers to produce more, with their existing infrastructure. The impact of IDDP in generating income, employment and return to investment for the rural masses cannot be undermined.

Due to increased income, the member households are able to spend more on entertainment, health, education and other luxurious consumption. Due to IDDP activity, there have been eye-catching changes in the consumption pattern of rural households, which is a positive sign of poverty alleviation.

CONCLUSION AND REMARKS

The study found that there is extreme volatility in dairy profitability from year to year on an industry level based on both macro and micro economic factors. While broad macro-economic factors are beyond individual producers' control, producers do have control over some of the micro level factors at the farm level. Specifically, this analysis suggests that producers that are significantly more profitable than average are much more productive in terms of milk production per cow while having similar to slightly lower costs on a per cow basis. Furthermore, it was found that the variability in returns across producers at a point in time is much larger than the variability in average industry returns over time. Thus, while macroeconomic factors impacting overall profitability in the dairy industry are important, producers' individual management skills are more important for long-term business survival. A potential weakness of this study is there is little non-economic data evaluated in this data set (e.g., facility type and age, years in business, etc.) that would help better identify specific management styles of individual producers. It is believed that results from this study can be useful for operations of all sizes as they think about what they need to focus on for long-term business survival.

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ANALYSIS OF COST OF EQUITY AND LEVERAGE OF POWER SECTOR

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ABSTRACT

In this paper we have calculated the cost of equity of companies working in power sector and checked under which method the cost of equity is more relatable to the market growth rate. Also, we have calculated the various types of leverage to assess the structure of assets and their nature of financing. Finally, the paper concludes on the basis of analysis that cost of equity calculated under CAPM method is more relatable with the market growth rate. CAPM is the more effective method to calculate the cost of equity than other methods.

KEYWORDS

cost of equity, leverage, power companies.

JEL CODE

G13.

I. INTRODUCTION

Cost of capital is one of the main parameters to undertake every capital budgeting project. Many companies use a combination of debt and equity to finance their capital. For those companies, analysts and investors typically mean the weighted average of a firm's cost of debt and cost of equity blended together (WACC) while explaining cost of capital. The cost of capital metric is used by companies internally to assess whether a capital project is worth the expenditure of resources. Therefore, investors make investment decisions depending on the expected or required level of interest rate determined by the risk scale of a given project. It also includes the uncertainty regarding the time required before the expected returns are gained. Generally, the greater the risk for the investor, the higher the expected returns. Without any hope of greater returns, investors would not consider carrying out projects with higher risk levels at all; In order to assess the economic effectiveness of the projects, investors use a variety of methods, the most widespread of which is the discounted cash flow analysis (DCF). This technique takes the time value of money and uses the cost of capital to update (as of the assessment date) future financial results into account.

Leverage means that a percentage change in one amount causes a relatively large amount of change in other amounts. The process of increasing the earning per share to the equity shareholders by changing the fixed operating cost and fixed financial cost with respect to the change in sales is called leverage. Leverages are of three types: 1) operating leverage 2) financial leverage 3) combined leverage.

LITERATURE REVIEW

Based on various empirical literature it is proved that the relationship between leverage and K_e is extensive, but inconclusive. While some studies prove a positive relationship between cost of equity (K_e) and leverage (L), others show that returns are either insensitive or decline with leverage. Fama and French (1992) and George and Hwang (2007) in their studies determine that equity returns are not sensitive, even decline with book leverage, but Nielsen (2006) and Penman et al. (2007) find that while size and book-to-market factors are controlled, equity returns are not sensitive, rather fall with market leverage. However, a large number of studies tested different definitions of expected returns to determine whether there is any empirical relationship.

An empirical study conducted by Sharma and Rao (1969) showed that apart from tax advantages the cost of capital was affected by debt. This result was supported by another study conducted by Pandey (1985). Chandra (1997) has conducted a study to establish the effect of leverage on shareholders' return. This study has concluded that profitability has a strong influence on the financial leverage as well as on the shareholders' return in engineering industry in India.

Dhaliwal et al. (2006) examine the associations among the firm's implied K_e , leverage and corporate and investor level taxes. Their results conclude that the equity risk premium associated with leverage declines with the corporate tax benefits from debt.

The Capital Assets Pricing Model (CAPM) established by Sharpe (1964), Lintner (1965) and Mossini (1966) builds upon the "Portfolio Theory" presented by Harry Markowitz (1959). The Capital Assets Pricing Model (CAPM) assistances the basis for significant the required rate of return on all risky assets. The Capital Assets Pricing Model (CAPM) is mostly used by the finance managers or investors in finding the risk of the investment and to expect the expected return of the stock (Jagannathan & Wang, 1993). The Capital Assets Pricing Model (CAPM) is based on certain assumptions; (Van Horne, 2006). Unsystematic risk can be avoided by the portfolio diversification; however, investors are satisfied for the systematic risk of basic security which cannot be expanded away; higher the systematic risk higher will be the return the investors expect (Lau & Quay, 1974). Beta (β) is the measure of systematic risk and having Positive relationship with return.

OBJECTIVES

Here, in this paper, we will find out the most effective way of calculating the cost of equity. We have taken three companies from the power sector. We will calculate the cost of equity of these companies.

Also, we will calculate the 3 types of leverage of these companies and will try to find out the most effective one for these companies.

The objectives of the paper are as follows:

- To calculate the cost of equity of the three companies and to show that the CAPM method is the more reliable one.
- To find out the appropriate leverage indicator of these companies.

METHODOLOGY

We have taken three companies such as: Torrent Power, TATA Power, and CESC Limited. We have taken these companies because they are private companies. Data is collected from secondary sources i.e. from the Annual Report of these companies.

First, we will find out the cost of equity of these companies. Then we will calculate the leverage of these companies.

Cost of Equity

There are 6 methods for calculating the cost of equity, described as below:

1) Historical rate of return method

$$K_e = \left(\frac{\text{Average dividend per share}}{\text{Purchase price per share}} \right) + \text{Rate of increase in share price}$$

2) Earnings price Ratio Model

$$K_e = \frac{E}{P}$$

Where

E = Earnings per share

P = Current market price per share

3) Dividend Growth Model

$$Ke = \frac{D}{P} + g$$

Where

D = Dividend per share

P = Current market price per share

g = growth rate in dividend = b x r

b = (net profit – dividend) / net profit

r = Net profit / capital employed

4) Earning Growth Model

$$Ke = \frac{E}{P} + g$$

Where

E = Earnings per share

P = Current market price per share

g = growth rate in earning = b x r

b = (Net profit – Earning) / net profit

r = Net profit / capital employed

5) Bond yield plus risk premium method

$$Ke = \text{pre tax interest rate in longterm debt} + \text{risk premium}$$

Where risk premium is a judgmental factor. It is expected to be 2% to 4%.

6) Capital Asset Pricing Model

$$Ke = R_f + \beta (K_m - R_f)$$

Where R_f = Risk free return

K_m = Market return or expected return

β = Risk factor

Leverage

There are three types of leverages: 1) operating leverage 2) financial leverage 3) combined leverage.

1) Operating Leverage

Operating leverage arises when fluctuations in sales are accompanied by disproportionate fluctuations in operating profit. This is due to presence of fixed cost in the cost structure of the firms. Since the power sector companies have huge level of fixed cost, they have the advantage of operating leverage.

$$DOL = \frac{Q(S - V)}{EBIT}$$

Where Q = volume of sales

V = Variable cost per unit

S = Selling price per unit

2) Financial Leverage:

It is the firm's ability to use fixed financial charges to magnify the effects of changes in EBIT on the firm's EPS.

Degree of financial leverage (DFL) = $\frac{EBIT}{EBIT - INTEREST}$ when there is no preference share capital in the capital structure

If there is preference share capital in the capital structure,

$$DFL = \frac{EBIT}{EBT - \frac{Pd}{(1-t)}}$$

3) Combined leverage:

Degree of Combined leverage (DCL) = $\frac{Contribution}{EBT}$ when there is no preference share capital in the capital structure

If there is preference share capital in the capital structure,

$$DFL = \frac{Contribution}{EBT - \frac{Pd}{(1-t)}}$$

ANALYSIS AND FINDINGS

COST OF EQUITY STUDY

We have calculated cost of equity percentage for the three private sector power companies. For this purpose, we have used certain data as provided in the annual reports as well as some published figures such as share price on certain dates.

TABLE 1: DATA OBTAINED FROM THE ANNUAL REPORT 2016-17 AND 2017-18

Particulars	Unit	Tata power	Torrent power	CESC Ltd.
Dividend paid in 2017-18	Cr.	384	127	190
Dividend paid in 2016-17	Cr.	380	0	160
Earnings in 2017-18 - EBT	Cr.	1428.8	1375.53	864.66
Earnings in 2016-17 - EBT	Cr.	1321.68	583.94	861
share number in 2017-18	No.	2707605570	480616784	132557043
Average dividend per share	Rs.	1.420	2.640	14.348
Purchase price per share	Rs.	92.75	320.85	966.2
Rate of increase in share price	%	11	13.83	15
EPS	Rs.	12.05	19.18	65.23
Share price on 31-3-17	Rs.	90.35	230.35	841.2
Share price on 31-3-18)	Rs.	81.9	234.1	966.2

After doing the analysis, we have got the results which are shown below in the table:

TABLE 2: RESULTS OBTAINED FROM THE ANALYSIS

Methods	Tata power	Torrent power	CESC Ltd.
1. Historical rate of return method	-8%	3%	16%
2. Earning price Ratio Model	15%	8%	7%
3. Dividend Growth Model	-13%	5%	5%
4. Earnings growth model	-4%	6%	6%
5. Bond yield and Risk premium method	12%	Not Available	12%
6. CAPM Model	13%	10%	13%

Under CAPM model calculation, we have considered beta value as published.¹⁶ As we can see from the above table, the average cost of equity for the three power companies is around 12% for the method 5 and method 6.

But for method 5, pretax interest rate in long term debt was not available for Torrent power. Also, the risk premium is a judgmental value.

Whereas, the advantages of CAPM are as follows¹⁴:

- It considers only systematic risk, where most investors have diversified portfolios reflecting elimination of unsystematic risk.
- The relationship between required return and systematic risk has been theoretically-derived subject to frequent empirical research and testing.
- A better method of calculating the cost of equity than the dividend growth model (DGM) which explicitly considers a company's level of systematic risk relative to the stock market as a whole.
- This method is superior to the WACC in providing discount rates as a tool in investment appraisal.

We compared the cost of equity as calculated from the method 6 with the growth of BSE Sensex.¹⁵

We have seen that the market growth rate is around 11%, which is near the result we have calculated under CAPM model.

LEVERAGE STUDY

We have calculated the Degree of operating leverage (DOL), Degree of financial leverage (DFL) and Degree of combined leverage (DCL) for these three companies from the published annual reports. The Results are as follows:

TABLE 3: DOL, DFL AND DCL OF THREE COMPANIES

2017-18	Units	Tata power	Torrent power	CESC Ltd.
EBIT	Cr.	2860	2215	1377
Interest	Cr.	1431	840	484
Contribution or fixed cost	Cr.	3849	3519	2701
Degree of operating leverage(DOL)(Contribution/EBIT)		1.3	1.6	2.0
Degree of financial leverage(DFL) EBIT/EBT		2.0	1.6	1.5
Degree of combined leverage(DCL) contribution/EBT		2.7	2.6	3.0

It can be seen from the above table for CESC, the DOL is high and DFL is low which means high level of fixed cost structure and low level of debt financing. High operating leverage signifies that company is making few sales with high margins. Low financial leverage signifies that a better approach towards the debt capital has been adopted by the management. This results in a decrease in management decision making on earning per share. It reflects the optimum situation.

For Tata Power, the DOL is low and DFL is high which imply a better situation for maximizing return with minimum possible risk. Hence, full advantage of debt financing can be taken.

For Torrent power the DOL as well as DFL is low which implies these leverages show that the amount of fixed costs is very small and proportion of debts in capital is also low.

CONCLUSION

To conclude, we can say that the cost of equity calculated under CAPM method is more relatable to the market growth rate. CAPM is the more effective method to calculate the cost of equity. In case of leverage, we have seen that for high DOL and low DFL, management can partly dilute the adverse effect of high operating leverage by having low financial leverage. For low DOL and high DFL, operating cost is low so full advantage of debt financing can be taken. In case of low DOL and low DFL, management is taking a very cautious approach towards debt financing. It is difficult to maximize the return to the shareholders in this case.

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