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POLYMORPHISM OF CLASSES AND REFERENCE OF INSTANCES DISTRIBUTION FOR ECONOMIC OBJECTS IN APPLICATIONS

Emilia VASILE, PhD Professor

Athenaeum University, Bucharest, Romania
rector@univath.ro

Dănuț-Octavian SIMION, PhD Associate Professor

Athenaeum University, Bucharest, Romania
danut_so@yahoo.com

Abstract: *The paper presents the polymorphism of classes and reference of instances distribution for economic objects in applications. Data stored in a database is persistent data, ie data that remains stored on magnetic media, independent of the execution of application programs. Persistent database data is entered, deleted, or updated using input data (from the keyboard, from reading data files, or from receiving messages). Input data is generally non-persistent data; they are generated by users and are stored (becoming persistent data) only after they have been validated (accepted) by the DBMS. The output data of a database system is also non-persistent data; they come from database query operations and are made available to the user (in the form of impressions, printed reports, etc.). The correspondent model for database tables and entities are classes that encapsulate properties and methods. Data - acts as a bridge between machine components (hardware and software) and the human component. The database contains both operational data (the set of records being worked on) and metadata. Polymorphism can obtain new objects derived from existing classes that map custom business logic which includes specific economic operations. The data model is defined as a set of concepts used in the description of the data structure. The structure of the database means the type of data, the connection between them, the restrictions applied to the data.*

Keywords: *polymorphism, specific classes, economical data, derived classes, business flows, application modules, analysis of data*

Coduri JEL: C23, C26, C38, C55, C81, C87

1. Introduction

An external schema or user's view contains a conceptual sub-schema of the database, specifically the description of the data that is used by that group of users. The conceptual schema of the database (conceptual schema) corresponds to a unique (for all users) and abstract representation of the data, describing what data is stored in the database and what are the associations between them. The internal or physical schema of the database (internal schema) specifies how the data is represented on the physical medium. A database system supports an internal schema, a conceptual schema, and several external schemas; all these schemes are different descriptions of the same data collection, which exists only internally.

The external level or the visual level (user), includes a collection of external schemes, which are views of the different groups of users, there being an individual view of the data for each group;

The conceptual level - or conceptual (logical) schema of the database, describes the structure of the entire database for all users. At the conceptual level, a complete description of the database is made, hiding the details related to the physical storage and detailing the description of the entities, the types of data, the relations between them and the associated restrictions;

The internal layer contains the internal schema that describes the structure of physical data storage in the database, using a model of physical data. This level describes the full details of the storage and how to access the data (Del Nero, 2020; Campbell, 2020).

In many DBMSs a clear distinction cannot be made between the three levels, often the conceptual level is strongly developed and apparently replaces the other levels. Also, when developing applications, there is a fusion of the external level with the conceptual one.

2. The operator reference and instance distribution

The expression to throw a <reference> from <source type> to <destination type> has the following syntax:

(<destination type>) <reference>

A distributed expression checks whether the object's reference value denoted by <reference> is attributable to a reference of type <destination>, ie that <source type> is compatible with <destination type>. If not, a

ClassCastException is thrown. The null reference value can be assigned to any type of reference. The binary instance operator has the following syntax:

```
<reference> instanceof <destination type>
```

The instanceof operator returns true if the left operand (<reference>) can be thrown to the right operand (<destination type>), but always returns false if the left operand is null. If the instanceof operator returns true, then the corresponding distribution expression will always be valid. Both distribution and court operators require a compile-time check and a run-time check, as explained below.

Compile-time verification determines whether a <source> reference and a <destination> reference can indicate reference-type objects that are a common subtype of both <source> and <destination> type in the type hierarchy. If that is not the case, then obviously there is no relationship between the types and neither the distribution nor the application of the court operator would be valid. When running, it is the type of real object denoted by the <reference> that determines the result of the operation.

With <source type> and <destination type> as Product and String classes, respectively, there is no subtype-supertype relationship between <source type> and <destination type>. The compiler would reject throwing a Product reference to a String type or applying the operator instance, as shown in previous example. With <source type> and <destination type> as Product classes and TubeProduct, respectively, the Product and TubeProduct references can indicate objects in the TubeProduct class (or subclasses) in the inheritance hierarchy. Therefore, it makes sense to apply the operator instance or send a Product reference to the TubeProduct type (Hewitt, 2019; Chand, 2020).

During operation, the result of applying the court operator is false, because the reference Product1 of the Product class will actually name an object of the Bulb subclass, and this object cannot be denoted by a reference of the Product1 peer class. Applying the distribution results in a ClassCastException for the same reason. This is why expressed conversions are said to be unsafe, as they could throw a ClassCastException at runtime. Note that if the result of the operator instance is false, the distribution involving operands will throw a ClassCastException.

In the example, the result of applying the instanceof operator is also false, because the reference Product1 will further denote an object of the Product2 class, whose objects cannot be denoted by a reference

of its subclass Product3. Therefore, applying the distribution causes a ClassCastException to be thrown at runtime.

The situation presented in the example illustrates the typical use of the instanceof operator to determine which object denotes a reference, so that it can be performed for the purpose of carrying out special actions. The reference Product of the Product class is initiated on an object of the Product3 subclass (Ryder, 2020; Chand, 2020). The result of the instanceof operator is true, because the reference Product1 will denote an object of the Product 4 subclass, whose objects can also be denoted by a reference of its Product1 superclass. In the same sign, the distribution is also valid. If the result of the instanceof operator is true, the distribution involving the operands will always be valid.

Example instanceof and Cast Operator

```
class Products {/ * ... * /}
class Products1 extends Products {/ * ... * /}
class Products2 extends Products {/ * ... * /}
class Products3 extends Products {/ * ... * /}
class Products4 extends Products {/ * ... * /}

public class TestProduct {
    public static void main (String [] args) {
        boolean result1, result2, result3, result4, result5;
        Products1 products1 = new Products1 (); // (1)
        // String str = (String) products1; // (2) Compile-time error.
        // result1 = products1 instanceof String; // (3) Compile-time error.
        result2 = products1 instanceof TubeProduct; // (4) false. Peer class.
        // Products2 products1 = (Products) products2; // (5) ClassCastException.

        result3 = products3 instanceof Products3; // (6) false: Superclass
        // Products products3 = (products2) products1; // (7) ClassCastException

        products4 = new Products4 (); // (8)
        if (products1 instanceof Products) { // (9) true
            Products4 products4 = (products) products1; // (10) OK
            // You can use products4 to access the Products4 class.
        }
    }
}
```

As we have seen, the instance operator actually determines whether the object reference value noted by the reference on the left can be assigned to a reference of the type that is specified on the right. Note that an instance of a subtype is an instance of its supertypes. At runtime, it is the type of the actual object noted by the reference on the left, compared to the type specified on the right. In other words, what matters is the type of the actual object denoted by the reference at run time, not the type of reference (Wagner 2019; Ryder 2020).

The previous example provides several examples of a court operator. It is instructive to go through the printed statements and understand the printed results. The literal null is not a court of any kind of reference, as shown in the printing statements (1), (2) and (6). An instance of a superclass is not an instance of its subclass, as shown in the print statement (4). An instance of a class is not an instance of a totally unrelated class, as shown in the print statement (10). An instance of a class is not an instance of an interface type that the class does not implement, as shown in the print statement (6). Any non-primitive array is an Object and Object [] instance, as shown in the print statements (4) and (5), respectively.

Example - Using the operator instance

```

IStack interface {/ * From the previous Example * /}
ISafeStack interface extends IStack {/ * From Previous Example * /}
class StackImpl implements IStack {/ * From Previous Example * /}
class SafeStackImpl extends StackImpl
    implements ISafeStack {/ * From the previous Example * /}

public class Identification {
    public static void main (String [] args) {
        Object obj = new Object ();
        StackImpl stack = new StackImpl (10);
        SafeStackImpl safeStack = new SafeStackImpl (5);
        IStack iStack;

        System.out.println ("(1):" +
            (null instanceof Object)); // Always false.
        System.out.println ("(2):" +
            (null instanceof IStack)); // Always false.

        System.out.println ("(3):" + // true: instance of subclass of
            (stack instanceof Object)); // Object.
        System.out.println ("(4):" +
            (obj instanceof StackImpl)); // false: Downcasting.
        System.out.println ("(5):" +
            (stack instanceof StackImpl)); // true: instance of
StackImpl.

```

```
System.out.println("(6):" + // false: Object does not imple-
ment
    (obj instanceof IStack)); // IStack.
System.out.println("(7):" + // true: SafeStackImpl implements
    (safeStack instanceof IStack)); // IStack.

obj = stack; // Assigning subclass to superclass.
System.out.println("(8):" +
    (obj instanceof StackImpl)); // true: instance of StackIm-
pl.
System.out.println("(9):" + // true: StackImpl implements
    (obj instanceof IStack)); // IStack.
System.out.println("(10):" +
    (obj instanceof String)); // false: No relationship.

iStack = (IStack) obj; // Cast required: superclass assigned
subclass.
System.out.println("(11):" + // true: instance of subclass
    (iStack instanceof Object)); // of Object.
System.out.println("(12):" +
    (iStack instanceof StackImpl)); // true: instance of
StackImpl.

String [] strArray = new String [10];
// System.out.println("(13):" + // Compile-time error,
// (strArray instanceof String); // no relationship.
System.out.println("(14):" +
    (strArray instanceof Object)); // true: array subclass of
Object.
System.out.println("(15):" +
    (strArray instanceof Object [])); // true: array subclass
of Object [].
System.out.println("(16):" +
    (strArray [0] instanceof Object)); // false: strArray [0]
is null.
strArray [0] = "Amoeba strip";
System.out.println("(17):" +
    (strArray [0] instanceof String)); // true: instance of
String.
    }
}
```

Output program:

```
(1): false
(2): false
(3): true
(4): false
(5): true
```

```
(6): false
(7): true
(8): true
(9): true
(10): false
(11): true
(12): true
(14): true
(15): true
(16): false
(17): true
```

Convert class and interface type references

References to an interface type can be declared, and they can indicate class objects that implement that interface. This is another example of upcasting. Note that converting an interface type reference value to the class type that implements the interface requires explicit casting. This is an example of downcasting. The following code illustrates these cases:

```
IStack    istackOne = new StackImpl(5);           // Upcasting
StackImpl stackTwo = (StackImpl) istackOne;      // Downcasting
```

Using the reference `istack` An `IStack` interface type, `IStack` interface methods can be invoked on objects in the `StackImpl` class that implement this interface. However, additional members of the `StackImpl` class cannot be accessed through this reference without first sending it to the `StackImpl` class:

```
Object obj1 = istackOne.pop();           // OK. Method in IStack inter-
face.
Object obj2 = istackOne.peek();         // Nu OK. Method not in IStack
interface.
Object obj3 = ((StackImpl) istackOne).peek(); // OK. Method in Stack-
Impl class.
```

3. Polymorphism and dynamic methods

As an object, a reference will actually denote during run, it cannot always be determined at compile time. Polymorphism allows a reference to name objects of different types at different times during execution. A supertype reference has a polymorphic behavior because it can denote objects of its subtypes.

When a non-private instance method is invoked on an object, the definition of the method actually executed is determined by both the runtime object type and

the method signature. Dynamic method searching is the process of determining the method definition that a method signature makes during run, based on the object type. However, a call to a private court method is not polymorphic. Such a call can only take place within the class and is linked to the implementation of the private method at the time of compilation (Del Nero, 2020; Chand, 2020).

The inheritance hierarchy is implemented in the following example. The implementation of the draw () method is undone in all subclasses of the Shape class. The invocation of the draw () method in the two loops from (3) and (4) in the following example, is based on the polymorphic behavior of the references and the dynamic search of the method. Sheet metal shapes contain shape references indicating a circle, a rectangle and a square, as shown in (1). At runtime, the dynamic search determines the execution of the draw () to be executed, based on the type of object noted by each element in the table. This is also the case for the elements in the drawables in (2), which contain IDrawable references that can be assigned to any object of a class that implements the IDrawable interface. The first loop will still work without any changes if objects from new subclasses of the Shape class are added to the array shapes. If they did not replace the draw () method, then an inherited version of the method would be executed. This polymorphic behavior applies to whiteboard drawings, in which subtype objects are guaranteed to have implemented the IDrawable interface.

Polymorphism and dynamic method search form a powerful programming paradigm that simplifies client definitions, encourages object decoupling, and supports dynamic change of object-to-object relationships.

Example - Polymorphism and dynamic search of methods

```
IDesen interface {
    void draws ();
}

class Shape implements IDesen {
    public void draw () {System.out.println ("Draw a figure."); }
}

class Circle extends Figure {
    public void draw () {System.out.println ("Draw a Circle."); }
}

class Rectangle extends Figure {
    public void draw () {System.out.println ("Draw a Rectangle."); }
}
```

```
class Square extends Rectangle {
    public void draw () {System.out.println ("Draw a Square."); }
}

class Map implements IDesen {
    public void draw () {System.out.println ("Draw a Map."); }
}

public class PolymorphRefs {
    public static void main (String [] args) {
        Figure [] figures = {new Circle (), new Rectangle (), new
Square ()}; // (1)
        Drawing [] drawings = {new Figure (), new Rectangle (), new
Map ()}; // (2)

        System.out.println ("Draw figures:");
        for (int i = 0; i <figures.length; i ++) // (3)
            figures [i] .deseneaza ();

        System.out.println ("Draw figures:");
        for (int i = 0; i <figures.length; i ++) // (4)
            figures [i] .deseneaza ();
    }
}
```

Output program:

```
Draw figures:
Draw a Circle.
Draw a Rectangle.
Draw a Square.
Draw figures:
Draw a Figure.
Draw a Rectangle.
Draw a Map.
```

Choose between Inheritance and aggregation. Encapsulation

An object has properties and behaviors that are encapsulated inside the object. The services he offers to his clients include his contract. Only the object-defined contract is available to customers. Implementing its properties and behavior is not a customer concern. Encapsulation helps to clarify the difference between an object's contract and execution. This has major consequences for program development. The implementation of an object can be changed without implications for customers. Encapsulation also reduces complexity, because

the inside of an object is hidden by customers, who cannot influence its implementation (Hewitt, 2019; Ryder, 2020).

A UML class diagram shows several aggregation relationships and an inheritance relationship. The class diagram shows a queue defined by aggregation and a stack defined by inheritance. Both are based on linked lists. A linked list is defined by aggregation. The implementation of these data structures is presented in the following example. The example aims to illustrate inheritance and aggregation, not the implementation of industrial strength of tails and stacks. The Node to (1) class is simple, defining two fields: one indicating the data and the other indicating the next node in the list. The LinkedList class at (2) keeps track of the list by administering a head and a queue reference. Nodes can be inserted forward or backward, but deleted only from the front of the list.

Example - Implementation of data structures through inheritance and aggregation

```
class Node { // (1)
    private Object data; // Data
    private Node next; // Next node

    // Constructors for initializing the next node.
    Node (Object data, Node next) {
        this.data = data;
        this.next = next;
    }

    // Method
    public void setData (Object obj) {data = obj; }
    public Object getData () {return data; }
    public void setNext (Node node) {next = node; }
    public Node getNext () {return next; }
}

class LinkedList { // (2)
    protected Node head = null;
    protected Node tail = null;

    // Method
    public boolean isEmpty () {return head == null; }
    public void insertInFront (Object dataObj) {
        if (isEmpty ()) head = tail = new Node (dataObj, null);
        else head = new Node (dataObj, head);
    }
    public void insertAtBack (Object dataObj) {
```

```
        if (isEmpty ())
            head = tail = new Node (dataObj, null);
        else {
            tail.setNext (new Node (dataObj, null));
            tail = tail.getNext ();
        }
    }
    public Object deleteFromFront () {
        if (isEmpty ()) return null;
        Node removed = head;
        if (head == tail) head = tail = null;
        else head = head.getNext ();
        return removed.getData ();
    }
}

class QueueByAggregation { // (3)
    private LinkedList qList;

    // Builder
    QueueByAggregation () {
        qList = new LinkedList ();
    }

    // Method
    public boolean isEmpty () {return qList.isEmpty (); }
    public void enqueue (Object item) {qList.insertAtBack (item); }
    public Object dequeue () {
        if (qList.isEmpty ()) return null;
        else return qList.deleteFromFront ();
    }
    public Object peek () {
        return (qList.isEmpty ()? null: qList.head.getData ());
    }
}

class StackByInheritance extends LinkedList { // (4)
    public void push (Object item) {insertInFront (item); }
    public Object pop () {
        if (isEmpty ()) return null;
        else return deleteFromFront ();
    }
    public Object peek () {
        return (isEmpty ()? null: head.getData ());
    }
}

public class Client { // (5)
    public static void main (String [] args) {
        String string1 = "Queues!";
    }
}
```

```
int length1 = string1.length ();
QueueByAggregation queue = new QueueByAggregation ();
for (int i = 0; i <length1; i ++)
    queue.enqueue (new Character (string1.charAt (i)));
while (! queue.isEmpty ())
    System.out.print ((Character) queue.dequeue ());
System.out.println ();

String string2 = "! Reverse String";
int length2 = string2.length ();
StackByInheritance stack = new StackByInheritance ();
for (int i = 0; i <length2; i ++)
    stack.push (new Character (string2.charAt (i)));
stack.insertAtBack (new Character ('!')); // (6)
while (! stack.isEmpty ())
    System.out.print ((Character) stack.pop ());
System.out.println ();
}
}
```

Output program:

Queues!

Reverse string!

Choosing between inheritance and aggregation for model relationships can be a crucial design decision. A good design strategy argues that inheritance should only be used if the relationship is unequivocally maintained throughout the life of the objects involved; otherwise, aggregation is the best choice. A role is often confused with an is-a relationship. For example, given the class employee, it would not be a good idea to model the roles that an employee, such as a manager or cashier, can play by inheritance if these roles change intermittently. Changing roles would involve a new object representing the new role each time this happens (Wagner, 2019; Campbell, 2020).

4. Conclusions

Code reuse is best achieved by aggregation when there is no relationship. Applying an artificial is a relationship that is not naturally present, it is usually not a good idea. The class defines the operations of a queue, delegating such requests to the LinkedList base class. Customers who implement a queue in this way do not have access to the base class and therefore cannot break the abstraction (Hewitt, 2019; Campbell, 2020). Both inheritance and aggregation promote implementation encapsulation, because implementation changes are

localized in the classroom. Changing the contract of a superclass can have consequences for subclasses, called the ripple effect, and also for customers who are dependent on certain subclass behavior (Del Nero, 2020; Wagner, 2019). Polymorphism is achieved through inheritance and interface implementation. The code based on polymorphic behavior will continue to work without change if new subclasses or new classes that implement the interface are added. If there is no obvious relationship, then the polymorphism is best obtained by using aggregation with the interface implementation. In most application polymorphism offers flexibility and add value to existing models and so the users may choose the best models for their business logic and entities that are very specific.

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RISKS AND BENEFITS OF ADOPTING CLOUD ACCOUNTING

Daniela MITRAN, PhD Associate Professor

Athenaeum University, Bucharest, Romania

danielamitran@yahoo.com

Abstract: *The current business environment is extremely dynamic and competitive. Elements such as access to information, its transmission speed, quick decision making, mobility, and flexibility have become more and more important for companies operating in the field. Given that information technology has evolved incredibly fast over the past decade, digital technologies such as cloud computing, e-commerce, and mobile applications provide opportunities to improve networking with partners and customers, and new ways to generate value. Cloud applications have gradually gained ground to the detriment of locally operated applications. There are numerous advantages of cloud technology which can no longer be overlooked, especially by small- and medium-sized companies. At company level, regardless of its size or activity, the decision to change the accounting software is critical and may have a major positive impact on the business, nevertheless involving a series of risks that can be largely mitigated.*

Keywords: *Cloud accounting, Cloud computing*

JEL Classification: *M15, M41*

1. Introduction

More and more companies are now considering cloud technology a crucial pillar of their digital transformation, its implementation allowing for business to run safely and more efficiently.

Cloud computing is a distributed system providing computing services, applications, data access and storage, without the user needing to worry about the location and physical configuration of the systems that provide these services.

Companies can rent access to anything from applications to storage from a cloud service provider (CSP). The customer can use CSP services to access and process data from wherever there is internet access, via any kind of terminal, desktop, laptop, tablet, smartphone, etc.

Amid fierce competition among companies, these benefits may just be the key to a successful business.

Cloud computing offers customers more agility, scalability and flexibility. Instead of spending money and resources on outdated IT systems, customers can focus on more strategic activities. Without a large investment in advance, companies can quickly access the computing resources they need, only paying for what they need to use.

Modern cloud solutions help companies face the challenges of the digital era. Instead of managing their IT department, organisations can swiftly address more complex business challenges.

Cloud customers automatically benefit from the newest innovations and emerging technologies integrated by the cloud service provider, including from the use of cutting-edge technologies such as artificial intelligence (AI), chat robots, blockchain and Internet of Things (IoT).

Cloud computing models

There are different Cloud Computing Deployment models (Mell&Grance, 2011):

- ***Public cloud***, in which the entire computing infrastructure is located at the headquarters of the cloud provider, and the customer can access the services via the internet. The customer no longer has to maintain its own IT department and can quickly add more users or computing power, as necessary. The cloud provider hosts several entities that share its IT infrastructure.

The cloud infrastructure is provisioned for open use by the general public. It may be owned, managed, and operated by a business, academic, or government organisation, or some combination of them.

- ***Community cloud***. “The cloud infrastructure is provisioned for exclusive use by a specific community of consumers from organizations that have shared concerns (e.g., mission, security requirements, policy and compliance considerations)”. It may be owned, managed, and operated by one or more of the organizations in the community, a third party, or some combination of them, and it may exist on or off premises.

- ***Private cloud***, used exclusively by a single organisation, which can be hosted at its headquarters or at the cloud provider’s data center. A private cloud offers the highest level of security and control.

- **Hybrid cloud**, which is a combination of two or more distinct cloud infrastructures (private, community, or public) that remain unique entities, but are bound together by standardized or proprietary technology that enables data and application portability. In general, the customer hosts the applications essential to the business on its own servers, for higher security and control, while its secondary applications are stored at the cloud provider's location.

The basic cloud computing services are structured into three main categories:

a) **Infrastructure-as-a-service (IaaS)** provides internet-based access to storage and computing power, via a public connection, usually the internet.

The computing resource is provided via a subscription and consists in virtualized hardware - or in other words, computing infrastructure.

Tangibly, the set of hardware resources comes from a multitude of servers and networks, usually distributed across numerous data centers, under the management of the cloud provider,

The customer has access to virtualized components in order to create efficient IT solutions that are easily scalable, with management and hardware expenses being outsourced to the cloud service provider.

Infrastructure-as-a-service (IaaS) allows customers to access on-demand infrastructure services via the internet. The fundamental benefit is that the cloud provider hosts the infrastructure components, which provide computing, storage and network capabilities, so that subscribers can run their workflow in the cloud. The cloud subscriber is normally responsible for the installing, configuring, securing and maintaining any software in the cloud infrastructure, such as the database, middleware and application software.

For example, companies can use *IaaS* for:

- **Cloud hosting**; hosting websites on virtual servers which are distributed to resources collected from subjacent physical servers. A website hosted on the cloud benefits from the redundancy of a vast network of physical servers and on-demand scalability so as to cope with unexpected requests.
- **Virtual data centres (VDCs)**; a virtualized network of interconnected servers that can be used to provide increased cloud hosting capabilities, IT infrastructure for companies, or to integrate all these functionalities in a private or public cloud.
- **Enterprise infrastructure**; internal IT business networks, such as a private cloud or local virtual networks that use server and centralised

network resources, and can store data and run the applications needed on a day to day basis. Business can be easily expanded by scaling the infrastructure in accordance with rising demands, and private cloud solutions (accessible only in the internal network) can protect the storage and transfer of the company's sensitive data.

b). **Platform-as-a-service (PaaS)** is a cloud computing category that offers users a platform and an environment for developing and operating web or mobile applications.

The provider hosts the infrastructure components and middleware, and the client can access these services via a web browser.

PaaS may come with preconfigured features to which customers can subscribe, choosing to use those that meet their requirements and opting out of those they do not need.

Consequently, packages may vary from offering simple point-and-click services which do not require too much experience, to providing infrastructure options for advanced development.

The infrastructure and applications are managed for the customers and there is a technical support service available. Services are updated constantly, upgrading the existing features and including additional features.

PaaS providers can assist developers via an automated mechanism throughout the entire process of developing, testing and implementing original applications.

PaaS services are subscription-based, and customers ultimately pay only for what they use.

In order to boost productivity, Oracle's *PaaS* solutions offer ready-to-use programming components, which allow developers to create new functionalities in their applications, including such innovative technologies as artificial intelligence (AI), chat robots, block chain and Internet of Things (IoT). These also include solutions for analysts, end users and professional IT administrators, *inter alia* Big Data analyses, content management, database management, and system and security management.

c) **Software-as-a-Service (SaaS)** is a software provision model in which CPS hosts the customer's applications at its location. The applications are accessible from various client devices through either a thin client interface, such as a web browser (e.g. web-based email), or a program interface. Instead of paying for the maintenance of its own computing infrastructure, the customer subscribes to the service, paying as it uses it.

Many companies find SaaS to be the perfect solution, as it allows them to quickly become functional, using the most innovative technology available. Automatic updates reduce the burden on internal resources. Customers can scale services to support a fluctuating workload, adding several services or features, as they develop more and more.

A modern cloud suite can include and connect everything from financial services, human resources, acquisitions and supply chains, to solutions for trade, marketing, sales and services.

In response to the challenges of the business environment, a modern SaaS suite can promote modernisation in the entire business by supporting fast innovation, offering superior customer experiences, and facilitating better business decisions with the help of integrated analysis capabilities and a comprehensive view of the business.

Nevertheless, some companies may not agree to use the same SaaS applications as their rivals if they are focused on the need to maintain a competitive advantage and the security of sensitive data.

Companies may opt to use several cloud computing and storage devices in a single architecture. The customer can have a combination of software as a service (SaaS), platform as a service (PaaS) and infrastructure as a service (IaaS).

Although cloud solutions are viewed as generally safe, companies can take additional measures to secure data, ensuring that only authorised individuals can access the system, and by implementing solutions such as VPNs that mask individual internet protocols, they can work to prevent potential cybersecurity issues.

2. Cloud accounting

Traditional accounting software is installed locally, on the company's hardware. Normally, to use these applications, a licence must be purchased and maintenance (upgrades, troubleshooting, back-up, etc.) must be provided either by their own staff or by the provider (for a fee).

A cloud accounting application is an accounting software that can be accessed from anywhere with an internet connection, without needing to be installed and managed on own servers, and all the data is safely stored on cloud servers. Using all the benefits of cloud technology, cloud accounting software is a real solution for increasing a company's efficiency and competitiveness. All tasks related to accounting, invoicing, sales and planning can be performed via SaaS.

Cloud applications have gradually gained ground to the detriment of locally operated applications. There are numerous advantages of cloud technology which can no longer be overlooked, especially by small- and medium-sized companies.

2.1. Benefits of Cloud Accounting

Compared to software applications installed on individual computers, cloud accounting technology offers mobility and freedom, as data and applications can be accessed at any time and anywhere there is an internet connection.

Online data centralisation allows fast access to all authorised individuals, regardless of their location, and increases the transparency of document and data movement, as well as the control and authorisation of access to various procedures and files.

Accounting costs are significantly lowered considering that:

- The purchase of licences, servers and other IT equipment can be a very expensive investment, while choosing a cloud-based solution reduces these costs to a minimum.
- The responsibility for the optimal functioning of the applications falls solely on CSPs, thus lowering the costs for server management, update, upgrade, back-up.
- Applications are ready to use at the moment of subscription, with no initial installation costs.
- Cloud accounting services are subscription-based, the amount of fees paid depending on usage.
- Scalability is an important feature of this technology as it allows the management of a larger data volume by supplementing demand for cloud services, at minimal additional costs, thus ensuring higher flexibility, with no further investment in equipment or infrastructure.
- Real-time access to information provides an overview of the company's financial position, as well as access to detailed financial breakdowns, management information and key performance indicator (KPI) metrics.
- The software updates happen automatically as soon as they are available and most of the time they are free for the existing customers.
- Automatic backups are created in order to ensure uninterrupted access to data through recovery in case of accidental data destruction or natural disaster.

- Cloud computing applications can be accessed from various devices connected to the internet, such as laptops, smartphones and tablets.
- In some situations, applications can be customised to better answer customer needs.
- Most cloud accounting service providers offer customer service and technical support, which are very useful for less experienced users, and also ensure higher protection.
- Encryption of data that is to be stored in the cloud provides increased security, in the event of unauthorised access. There are different types of encryption and different standards of safety which can be adopted depending on the nature of the data circulated and the wishes of the cloud service user. An 128-bit SSL (Secure Sockets Layer) encryption can be used for accounting software.

Companies that offer cloud services have strict rules and procedures in place for data security.

2.2. Risks of cloud accounting

Using cloud accounting services also entails a series of risks that may be lower or greater depending on the size and structure of the company, its internal data security and, last but not least, the CSP chosen.

Main risks of transitioning to cloud accounting:

- **Connectivity risks**

Cloud services' advantage of being accessible any time and from anywhere disappears when the internet connection is not available, unstable, or low speed. In order to reduce this risk, redundant internet connections (e.g. mobile data backup) may be chosen.

The compromising of the APIs (application programming interfaces) used by the customer in managing and interacting with cloud services can pose a significant risk. These application programming interfaces can have a series of software vulnerabilities that can be additionally exploited, given that they are accessible via the internet. Once discovered, these vulnerabilities can turn into attacks on organisation cloud assets or even on other CSP customers.

A **Denial-of-Service (DoS) attack** is an attack aimed at denying legitimate users access to a computer or network. DoS attacks accomplish this by flooding the target with traffic, or sending it information that triggers a crash.

A DDoS (Distributed DoS) attack uses several computers to launch a coordinated DoS attack on one or more targets. Using client/server technology, the attacker can increase the efficiency of the DoS attack by capitalising on the resources of several accomplice computers against their will, using them as attack platforms (Stein, L.D., Stewart, J.N., 2002).

In 2020 H1, there have been 4.83 million DDos attacks at online platforms and services, while the largest monthly number of attacks happened in May, with more than 929,000 DDoS attacks. However, DDoS attack frequency jumped 25% during peak pandemic lockdown months - March through June. (Help net security, 2020).

- **Reduced control and visibility of cloud data**

The loss of data stored in the cloud can occur not only following malicious attacks, but also as a result of a natural disaster, of the customer losing the encryption key used to encrypt the data before uploading it, or of the CSP accidentally deleting the data.

The customer's lack of visibility on how data is stored on different storage devices within the CSP's infrastructure makes it difficult to check the safe deletion of its data. Specifically, data can be incompletely deleted, remaining on various storage devices of the provider and may eventually be available to attackers.

Given the risk of data loss, a series of measures should be considered to ensure data recovery.

- **Security breaches**

Cloud data is accessed through accounts created and managed differently, depending on the service provider. Unauthorised data access is more frequent via password theft. The attacker can gain access not only to the company's data, but also to that of other companies using the same CSP.

Access passwords to cloud systems are most often the weakest points. Data can be accessed on any device connected to the internet, thus strong, unique passwords are necessary so as not to be vulnerable to an attack.

E-mail security is as important given that, in a lot of cases, this is the key password reset mechanism for cloud apps.

- **Insiders abuse authorised access**

One of the most serious threats to an organisation is an insider threat. Insiders, such as staff and administrators for both organisations and CSPs, who abuse their authorised access to the organisation's or CSP's networks, systems, and data are uniquely positioned to cause damage or exfiltrate information.

This threat may involve fraud, theft of confidential or valuable commercial information, theft of intellectual property, or sabotage of IT systems. Threats can come from: ill-intentioned individuals that take advantage of their access to information to damage an organisation, negligent individuals, namely people who make errors and fail to consider security policies, endangering their organisations, and infiltrated individuals, who are external actors that obtain legal access credentials without authorisation.

Over the last two years, there's been a 47% increase in the frequency of incidents involving insider threats. This includes malicious data exfiltration and accidental data loss.

Incidents involving stolen credentials causing the most financial damage. Insiders abusing authorised access can be very expensive, may lead to incidents that expose various customers and are harder to prevent than external attacks. Insider threats are invisible to traditional security solutions like firewalls and intrusion detection systems.

As per a recent survey (Trzeciak, R.F, 2017), 27% of the total cyber crime incidents were supposed to be conducted by insiders, and 30% of respondents specified that the destruction caused by insiders was more severe than the loss caused by external attackers or malicious intent or financial gain.

- **Vendor Lock-In or portability issues to another CSP.**

The risk of bankruptcy of the cloud service provider should also be analysed, and the necessary measures to prevent data loss should be taken.

Changing the cloud service provider can be difficult and involves costs and time, considering the non-standard data formats, non-standard APIs, and reliance on one CSP's proprietary tools and unique APIs.

Each CSP wants to maintain its customers and develops functions and services to set it apart from its competition. Every company must establish if and to what extent it wishes to depend on a sole provider and on the facilities it offers, or if it desires high portability. Using cloud-native applications based on containers and microservices ensures portability between clouds, but does not allow access to all the facilities they offer.

In order to avoid being locked-in to a single CSP and to have more benefits and new services, large companies adopt a multi cloud strategy.

- **A failure to maintain separation among tenants** that use the same infrastructure or applications of the CSP can be used by an attacker to gain access from one organisation's resource to another user's or organisation's assets or data. To reduce this risk, sensitive data can be stored by the CSP on separate

physical hardware from other customers, setting up a private cloud or using an API to keep their data onsite while still using the cloud-based application.

- **Increased complexity strains into IT operations.**

Introducing cloud services increases the complexity of IT operations, as it is necessary to have skilled IT staff to ensure the migration of assets and data to the cloud in addition to their current responsibilities for on-premises IT.

If the company's staff uses additional cloud services, unauthorised by the organisation's IT department, it may lead to an increase in malware infections or data exfiltration.

Not knowing the security measures used by the CSP and the responsibility to also ensure own security measures heightens cybersecurity risk.

3. Conclusions

The benefits of cloud services are undeniable, regardless of the size of the organisation and business activity, and are capitalised on by more and more companies in spite of the possible risks involved in using these new IT technologies.

Transitioning to cloud computing entails major changes not only to companies' structure and operation, but also to the mentality and work culture of the managers and the entire staff.

A cloud accounting provider must be chosen after a thorough review of the offers on the market so as to select the best solution for the specific activity and the company's digital architecture, as well as to minimise the risks surrounding this transition.

Integrating cloud computing technology in a company involves the design of a solid digital architecture to integrate, along with cloud based accounting, other cloud services necessary for increasing productivity, improving communication, and boosting innovation.

For small and medium-sized enterprises with underdeveloped IT systems, cloud services can improve their security, and in the case of large companies, the control of cloud services may require additional data security solutions.

Data security risks increase as companies access cloud computing services via devices that are not sufficiently protected or show software vulnerabilities (often run software which can be exploited such as Office, Outlook, Internet Explorer, Flash and Acrobat Reader), which can be taken advantage of by intruders.

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PANDEMIC SARS-COV-2 DEVELOPMENTS AND PROJECTIONS. SOME EUROPEAN COUNTRY CASES

Dalina-Maria ANDREI, PhD

Institute of Economic Forecasting, Bucharest, Romania
dalinaandrei@yahoo.com

Abstract: *This article below sees the countries' behaviours while a quick, although gradual resuming the economic activity previously interrupted by the pandemic crisis of Sars-Cov-2. There will be reviewed measures adopted, statistics, related policies applied since the beginning of this crisis and, where appropriate, expected for the immediate future in the governments' agenda. Details, here including opinions inserted in this text, return in search of questions such as: (1) Why these countries and not those ones?; (2) Were these measures taken better or more efficient than the others?; (3) Were the earlier measures taken, e.g. in just primary moments of pandemic, more appropriate than the others for this exact reason, and which are these measures?; (4) What exactly makes these measures taken more credible?; (5) Who's interest(s) and responsibilities for these measures, of course, as the country's public authorities?*

Keywords: *European Union (EU), EU Member States, health crisis, economic activity*

JEL Classification: *A19, H12, I10, I11, I18*

1. Introduction

Lifting the lock-down was never coordinated acting either among the EU Member States, or even among the EU specific authorities (BBC, 2020). Actually, these 27 EU member States work independently from one-another with equally different health-care systems and strategies for not only fighting health specific crisis, but for then economic relaunching. And all these since facing similarly different rates of infection by countries – for the healthcare – and a common

hursh ,touch down' with the pandemic – for the economies. Moreover, there were and are different measures taken within the same individual country, e.g. in Italy, Lombardy, some ,non-essential' activities, including shops, were reopened while in Veneto pretty the same had been done before and then such picture was seeing itself significantly ,evolved'.

The EU member Governments. In the above order it is about notable differences of opinions at Government level within the EU Organization. For instance, during the April 15-20 weak the Austrian prime minister promoted the so-called “*staycation*” concept – i.e. days-off and/or holidays (i.e. vacations) to be passed at home –, but then his subordinate, the head of Austrian Tourism Office, on the contrary, suggested bilateral agreements to be concluded within the EU region about borders reopening during the next summer season.

To be perceived in context the common challenge to be faced by Governments – i.e. a true *multiple impact-risks equilibrium* ,game' for diverse series of measures to be taken, e.g. of social, economic and health categories. All these aiming at least finding the right pandemic vaccine. For instance, again, Denmark reopened primary schools exactly while Spain was barely releasing children to play outdoors and that after a five weeks ban – i.e. who's right and who's wrong to do this, versus that whilst SARS-COV-2 is obviously the same for all? Actually, the answer to this question, the same as all answers to all questions asked in this regard, will come only together with all to be known about this virus.

Another example to be here considered sees even the German Chancellor, Ms. Angela Merkel, as a kind of ,reference' for other persons in similar positions, i.e. an example of calm, authority and special circumspection, all face to essential measures like: extension of tests, tracking and quarantine of infected contacts.

European Commission (E.C) elaborates a set of recommendations to be addressed to the EU member States for both lock-down and next economic recovery. The basic principle here is that it is up to member States to decide about measures to be taken and the role of the European executive is that of some coordination for all works on controlling virus extending.

Or, it becomes obvious that Europe will live at least one more year with this virus: schools and markets with just a half people of what used to be in before the pandemic, mobile tracking applications, continuing social distancing and closed borders.

Relaxation and Member States' acting coordination. European Commission (EC), again, finds three conditions attached to a presumable primary relaxation. The one is that virus should be seen decreasing, then stabilizing curve on the time graph and this for a significant period onwards.

The next one is that the healthcare system should prove able to cure both the SARS-COV-2 and the rest of available diseases. And the third condition consists in capabilities ensured for testing people communities, i.e. of course, not only in hospitals. European Commission (EC) explains: “The primary emergency state, in which Government powers were quite exceptional, should be replaced by Government interventions either better targeted, or shaped within constitutional limits”.

European Community Executive warns of the need for inter-member States’ coordination to avoid this way negative effects extending to all member States and unwanted political frictions amongst. The EC’s primary recommendation in this respect is that of inter-member States notification, plus that of notification to the Commission of measures intended. Then the second EC’s recommendation comes on measures to be gradual, e.g. for reopening stores and other activities, then, and on taking the time needed to evaluate specific effects of these measures taken, first of all the effects on the virus’ spread.

Wearing a mask should remain mandatory and this in the larger picture of social distancing, of hygiene and its maintenance, as well. Ursula von der Leyen, the EC’s president, says: ‘These (i.e. masks) could help restraining virus, but never replace hygiene and specific measures’. Medical masks make an issue apart, in context, as attributed to medical staff only.

Then, it can be about groups of people that stay mostly vulnerable and need protection on longer term onwards, e.g. elderly people, sufferers of chronic diseases etc. And then increasingly intensive sanitation of transport stations and vehicles, of stores, of work places, these last for both workers and their customers.

Delicate aspects to be recalled in context, like a selection by groups of people coming back to work after lock-down, e.g. never all at once, but the less vulnerable ones first. Then, prior to what could be called in context the ‘essential’ activities, besides, teleworking encouraging.

Meetings should stay limited number of persons even in the presumable relaxation phase. Correspondingly, schools and universities, as reopened, should take extra care of sanitation, reorganize classes for smaller groups of schoolboys-girls and students and reconsider distance teaching-learning. Then it is the stores’ turn, for less people in at the same time, e.g. for retail trade. Then the restaurants and coffee shops, for both less people in at the same time and reduced working hours.

The European Commission recommendations principle is that of mass meetings all over remaining the last in order of priority. And lastly governments should stay prepared for all withdrawing as relaxation measures in case of presumably unwanted virus evolving.

The ‘tracking mobile’ application. This is a really special issue by definition: the one to warn citizens about increasing risk of contacting persons that are tested positive for SARS-COV-2, and this just together with lifting the lock-down. EC does insist for the last to be ‘volunteer’, i.e. based on ‘personal consent’ – on respecting the person’s privacy and on the already well-known rules of personal data protection. Then, it is this way to meet the other EC origin principle of this application: ‘the anonymity of the person that is here infected and comes to be detected by the application’. And this ‘other principle’ completes by all personal data deleted in the eventuality of the wished pandemic end. Besides, an EU officials here insisted that: “None of us intends to identify circumstances in which citizens would rather proceed to avoid such applications and/or its results, instead of getting aware of their own interests about preventing that has been missing for previous epidemics”.

Borders and travelling. As for the EU’s intra-borders, first of all the *Schengen* provisions *de facto* disintegrate, despite risks and blows taken on the account of at least activity chains and cross-border workers. The EC had the idea of border areas organized with drawn lines and alleys for fast traffic and special priority for trucks, all these together with corresponding guides.

Then, more recent EC’s statements make it clear that it might take pretty long time remaking the previous free movement across borders. It is written in an EC document that: ‘lifting the travelling restrictions and the new border control might last up to the desired convergence of *epidemiological data* all over the region and to *social distancing* responsibly applied’. And then the detail that: ‘travelling restrictions lifting could equally be a differentiated one, e.g. started between regions of comparable levels of virus spread’. In context, European Center of Prevention and Control of Diseases (CPCD) might cooperate with the EU member States to drawing such a strategy and to permanently adapting it to moving circumstances. The EC’s leader, Ursula Von der Leyen, warns about that some EU member States might hurry into lifting restrictions while their neighbouring ones yet report high infection rates. ‘The good and right neighbours are the ones who discuss with one-another’, she says. ‘Reopening borders will really be needed when the virus will be controlled and so *Schengen* will be back into force with its meaning of full free movement’, adds Von der Leyen.

But when, exactly, will this end? Commission says bluntly: ‘The most obvious of all aspects is that the society will be supposed to live with this virus up to discovering that disease vaccine and that proper cure’. This might be a year, as written in the EC document, basing on opinions from the European Medicines Agency (EMA), about: approvals, mass production capabilities, consumers and safely using the SARS-COV-2 vaccine. ‘It will be a long road back to normality’, recognizes the EC, in its same document, but here there are

also the ‘key’ items to such a desired path: a transparent public information and its management and the ability of Governments to keep both the economy ‘in its line’ and virus ‘on its contact’.

2. Literature review

Of course, there isn’t yet about a substantial literature on the Sars-Cov-2 virus or epidemic. Despite that, a number of articles, studies, even short books have already been published by the time of our study. In context, Eurostat (2020) and World Health Organization (2020) data published make reliable basis for our paper. Besides, news brought by the press and voices of government representatives are to deal with, as well. All statistics and studies that formed the basis of our analysis will be mentioned in the below bibliography, accordingly.

3. Research methodology

Our below discussions and conclusions are based on World Health Organization’s and Eurostat data all update, on newspapers’ Media and all news providing sources’ information about current evolution of Sars-Cov-2 Pandemic. Government decisions and opinions will equally be taken into consideration in order to obtain *a virus behaviour map* by countries wishing and able to communicate as such. Some country cases, and accordingly, developments and projections will finally be described.

4. Some European country cases. A short term description

The countries belong to all regions of Europe, namely member countries of the EU and not. It will be here obvious that this pandemic has met diverse circumstances, effects and impacts irrespective of such a country classification. These below will be - Germany, Austria, Czech Republic, Italy, Denmark - and some outside the EU region - United Kingdom and Norway – all these according to the criteria of willingness to get out of emergency state and of ‘that secret’ of selection among all countries around – i.e. the last criterion according to which some countries succeed better than the others.

4.1 Germany

This country’s distinction against other European ones seems to be that there was no need from the very beginning repeating to its 80 million inhabitants to stay home, but the real problem was slightly moving elsewhere: towards

a set of measures for social distancing published on March 22, this year. Or, these measures were as strict as their ‘staying home’ alternative. Government required quarantine, closed schools and banned all more than two people meetings. Hotels in Germany, together with their restaurants and coffee shops remained closed, in their turn, the same for sport halls and leisure establishments. Hotels were closing, except for the ones delivering food at home or at counter. Hairdressing and haircutting, in their turn, were recorded as ‘non-essential’ activities and so required to close, at the same.

When moving around within public space anyone was supposed to keep at least 1.5 meter distancing from anyone else. No more than two people meetings, except for families and/or people living together.

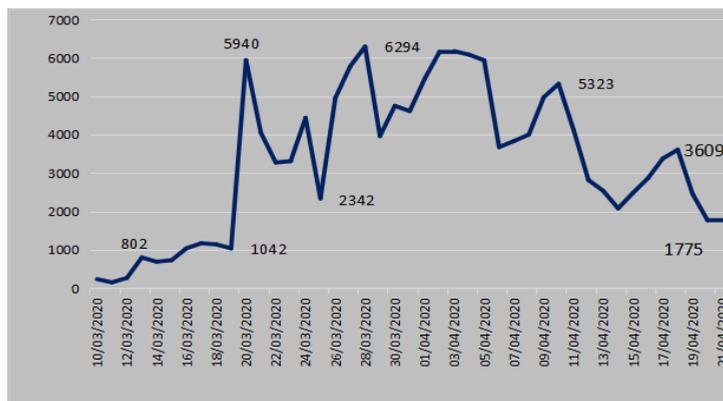
The list of measures included wearing mask in public places obligation, limiting public meetings and infection chains researching, all these intended by authorities to help remaking the normal life in the perspective of April 19, i.e. the end of quarantine.

According to the plan of measures, stores under 800 sq. meter areas were intended to reopen on April 20 and schools and universities to receive pupils and students at their courses from May 4.

On 1st April Chancellor Angela Merkel declared that social distancing specific measures would be prolonged towards the April 19, but on April 15, previously than that, she was expected to meet the leaders of all 16 lands to discuss about relaxation and schools reopening (www.dw.com).

As such, Germany started implementing that list of post-lockdown measures on April 19, among which stores and schools reopening in some regions and relaxing border control with keeping strict rules of social distancing.

Figure 1. Germany- SARS-COV-2/ New daily cases



Source: by the author, based on Eurostat

Regions and lands. Though to be remarked significant regime differences among German lands (www.bbc.com). In North-Rhine Westphalia all stores were reopening, i.e. both large and smalls, whilst in the rest of lands the stores under 800 sq. meter were getting prior for this. Bavaria and Saartland, as opposite examples, preferred to urge citizens to stay home more than the Federal Government ever did, here including for schools that were required to close back after the April 13-24 interval, i.e. the Easter holiday.

Relaxation and plans for future. This is for two zones of facts, measures and projections: the zone of facts that are real, certain, so supported by Government and all authorities, versus the zone of debate that is of course larger on both area and aspects. For the previous zone let us have first the fact that the German Government launched a 750 billion Euro package plan for economic rescue, actually a set of aids to companies and employees so dismissed.

One of key-dates is May 3, 2020, social distancing type restrictions would be likely to prolong – i.e. at least 1.5 meters distance among people and no more than 2 person meetings. Actually, meetings and private holidays were expected to be banned and wearing masks was to be imposed inside buses and all public establishments.

Prohibition of major events was also planned at least up to August 31, then the same for some autumn feasts – e.g. the famous ‚Oktoberfest‘ usually organized in Munich. Germany was equally keeping closed borders for 20 days more, while restaurants and their coffee shops, cinema halls and fitness centres were postponing reopening as *sine-diae* (<https://www.thelocal.de/>). However, all these were yet to be discussed on April 30 between Federal Government and lands for a decision to be taken in common. As already mentioned above, the other zone than that of facts is that of debate, called the ‚hot‘ zone. Here, first, the ‚Ifo Report‘ suggested that the country should make a national level group of experts and public policies representative scholars to be asked for recommendations on the expected relaxation and on industries‘ come back strategies.

All these measures were to be taken together with a maximal and coordinated effort of mass testing on the authorities‘ side. Besides, experts recommended either the education proper to hygiene, or instruction proper to specific rules of wearing masks, gloves and all protection equipment to all. Nurseries and schools were recommended to reopen more quickly than other working establishments since younger more rarely show severe symptoms and their staying home rather remains additional stress to parents and their everyday going to work.

Experts here added the possibility of different standards to be applied to different inside regions. There might be relaxation in regions exposing lower

degrees of infection and/or of transmission, e.g. rural communities. Then, in time communities were expected to adapt and develop some immunity the way they were evolving with less and less restrictions imposed.

As for economic sectors, more profitable ones like telecommunications and machine building industries should ever be prioritized, while the work able to be done from home should stay like this. A rapid reopening was here recommended to companies for products of medical use, while an opposite example was going to the hotels and restaurants industry. These would need to relax a control and careful way, given specific difficulties of here imposing the same hygiene and social distancing. Clubs and areas for leisure and fun should be here expected to stay close at that time, was written in the same experts' report, and all events relying on large numbers of people, e.g. shows and concerts, were to be countermanded.

4.2 Austria

On March 16, 2020, the Austrian State demanded to its 9 million inhabitants not to access public spaces – e.g. pharmacies, food stores and money machines --, except for certified reasons. Sports fields have also been closed, while though people stayed free to run and walk around outdoor, including together with families or with those they were living together with. No group of more than five in public spaces. Restaurants, bars and coffee shops, were ordered to close. There remained open the supermarkets and catering delivered directly to buyers. Borders with Italy and Switzerland, the neighbouring countries, were closed, as well. Train and plane trips were drastically reduced.

Figure 2. Austria-SARS-COV-2/ New daily cases



Source: by the author, based on Eurostat

Then, relaxation of these was starting on next April 14. ‘Non-essential’ stores, those under 400 sq meter areas, were reopened first. Then, there came hardware stores and public gardens. The next May 1 was for hairdressers’. Citizens were required to wear masks inside shops and public transport vehicles. Restaurants and hotels were yet supposed to wait for their reopening up to the middle of the same May, plus their organized events to wait similarly for the end of June (www.dw.com.)

Fully recognizing the harshness of these measures taken, the Austrian chancellor, Sebastian Kurz, considered their utility in the context of an exit from quarantine expected as quicker than in other countries’ cases. He added that the here desired final success against the virus always depends on the citizens’ reaction quality face to measures imposed. ‘The Easter week will be decisive’, estimated Kurz, cited by Reuters, his first allusion being to the planned reopening of all stores, here including retailers from May 1.

4.3 Czech Republic

This country is among the first European ones declaring emergency state this year earlier against this SARS-COV-2 virus, then taking the toughest measures as such – i.e. restrictions on public life since just the first 200 reported cases.

Developments. On 12 March the emergency state was declared, that meant the whole population under quarantine for an entire month, then prolonged up to April 30. The first quarantine measures contained isolation and staying home, except for essential commitments – i.e. not personal ones. Government required to anyone to wear mask out of home, but also allowed substitutes of, including handicraft ones.

From 26 March people were allowed out of homes, but never in groups of more than two persons or out of family. Families only were allowed to be more numerous than this. From 7 April outdoor sports were allowed and masks ceased to be required where people were minimum 2 meters inter-distancing (www.dw.com). On April 14 Government approved easing restrictions on leaving the country, as starting with commuter workers, those who were already doing this at that time. All travelling abroad was required to base on ‘reasonable reasons’ and, when back, travellers were supposed to accept a two week quarantine. Then, building materials and bicycle stores were also reopened (www.bbc.com).

Then, Prague was announcing the lowest number of new contaminations since March 22 and, if such a good trend was going on, Government would think about authorizing some stores to reopen – e.g. the ones of building materials; of office supplies – as well as about resumption of some outdoor sports activities -- such as tennis --, but all these without generating gatherings of people.

Figure 3. Czech Republic: SARS-COV-2/ New daily cases



Source: by the author, based on Eurostat

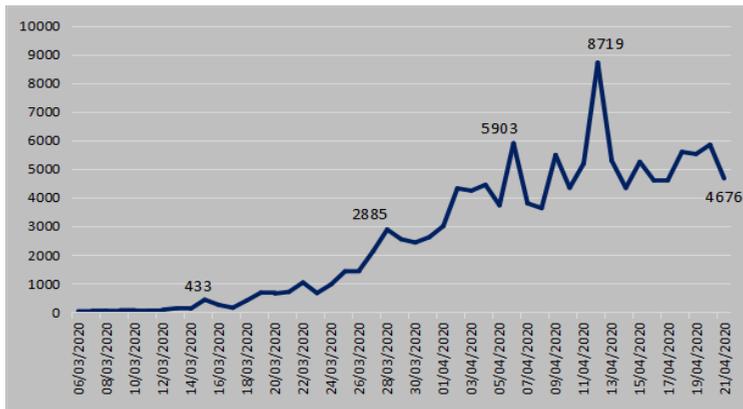
Projections. Karel Havlicek, the minister of industry, said that government would be supposed to allow re-opening stores and selling number of goods, from hobby ones to building materials, to relax restrictions for sports outdoor where no gatherings of people, e.g. running or cycling. So, after the Easter feasts a larger number of stores were expected to reopen, while the health minister, Adam Vojtech, on the other hand, was pointing out on strict measures of hygiene maintaining, social distancing among customers, disinfection and staff health control.

Government was aiming to provide tests for the population in order to control the virus spread and to develop an adequate health policy. One of the aspects that appeared as vital for quarantine relaxing might be the so-called 'smart-quarantine' – i.e. that was a plan for geo-location, via mobile phones, of the contacts of the new contaminants, of course in the help of rapid medical interventions (www.reuters.com).

4.4 United Kingdom

The British government ordered quarantine on March 23, 2020, through which exits from the house were limited to everyday shopping, medical needs and going to work where impossible to work from home. No public meetings. Running and cycling alone were allowed. Police were entitled to manage and impose quarantine although people weren't required to justify exits from home, destinations or intentions out.

Figure 4. United Kingdom: SARS-COV-2/ New daily cases



Source: by the author, based on Eurostat

Prime minister, Boris Johnson, after his positive testing and admission to intensive care, wrote an open letter to the British people in which he warned that: ‘We won’t hesitate to go further with these measures when so advised by scientists and healthcare specialists’. Fortunately for him, Mr. Johnson was treated and released from hospital on next April 12 (www.dw.com).

Relaxation was truly expected to start in the Easter feasts’ aftermath with a series of schools, stores and restaurants reopened. It was supposed to take a few weeks, according to a member of the Cabinet. But the most important aspect of all was a project of mass testing as large as possible and feasible. Robert Jenrick, the secretary responsible for housing issues, stated, in turn, that the after Easter feasts relaxation would have been supposed to be gradual and together with testing extended. Robert Halfon, president of Selection Committee in education and former member of Cabinet, was declaring himself fond of a gradual reopening of both schools and restaurants once the epidemic situation would rather improve.

To be here added that, during relaxation as well, a special attention on vulnerable persons would be likely to stay constantly intense and this beginning by asking them to stay home, like previously.

The British Finance, and not only, was estimating that the economy would bear irreparable losses if lock-down was lasting after June. So these were the two time coordinates of the pandemic challenge to the British area: the Easter time and the month of June 2020 (www.dailymail.co.uk/news).

4.5 Italy

Developments. Quarantine was ordered on March 9, 2020, in Italy. The last 60 million inhabitants stayed home in isolation and all non-essential activities, here including schools and universities, were closed. Only supermarkets, banks, pharmacies and post offices stayed open. Travelling around the country was forbidden, except for medical reasons, especially emergencies.

Figure 5. Italy: SARS-COV-2/ New daily cases



Source: by the author, based on Eurostat

Exits from home were drastically limited to just around and to special circumstances: shopping and accessing medical offices. Those people were required to fill one's own responsibility statements describing needs for exits/trips and to present them to the police upon request. And those who failed to comply with quarantine provisions were to be fined between 400 and 3,000 Euro or up to three months in prison.

In the end of March the Italian police saw itself overwhelmed by either robberies, or people's protests against government's delay in providing financial assistance to cover basic food needs. The deadline, originally set for April 3, was cancelled a few days earlier, on March 27 and then it was restored for April 13 and extended to May 3. But actually relaxation started on April 14: book stores, clothing stores, stores for children, including new-born ones and others were reopened. The wood industry came back to production either (www.dw.com).

Relaxation. Italian Ministry of Health published a strategic 'five points' plan for a gradual pandemic eradication. There were written down in this: general wearing of masks, physical distancing at work and all over in public and a new SARS-COV-2 specialized hospitals network to stay in place

after the end of crisis, as well. The executive in Rome here added a smart-phone application on the South Korean model for mapping the movements made by patients in the 48 hours time previous to their symptoms.

Primary activities to be restarted in Italy would have been related to supplying chains for food and pharmaceutical sectors. In such an order bars, restaurants, discos and sports halls would have been the last to reopen. Public transport was supposed to keep a low frequency and one sit of two was supposed to be taken.

Then, some health industry sectors and related were having priority chances to resume activity, the same for companies in and adjacent to the mechanical equipment industry, all these with a list of imperative and ‘critical’ precisions regarding protection of workers involved.

Officials were also speaking about a possible relaxation wave in early May, e.g. more centres and activities reopening, although at a lower extent and always provided that the numbers of Covid-19 cases and deaths caused had firmly lowered, plus bars and restaurants closed and social distancing untouched (www.bloomberg.com).

The region of Lombardy. In this Italian region the ‘*four D*’ rule was proposed for starting the expected relaxation. May 4 was supposed to be the date of restarting activities in Lombardy, but more interesting was the proposed way of doing this. So, these ‘four D’ are: (i) distance – i.e. at least 1 meter among citizens –, (ii) protection devices – e.g. mandatory protective masks –, (iii) digitization – i.e. where possibly to work at distance (smart-working) –, (iv) diagnostic. Professionals of Pavia started working on a test that was supposed to be fully Italian. Since April 21 rapid tests of detecting Covid-19 antibodies were starting, according to authorities. The last kept convicted that these four rules, associated to others like public transport timetable and congestion avoiding would be able to restart the economy’s engines in north Italy.

4.6 Denmark

Denmark, the same as Austria, was imposing the anti-SARS-COV-2 quarantine earlier than other European countries. On March 11 there were closed schools, restaurants, coffee shops care centres and borders for foreigners. With its 5.8 million inhabitants Denmark recorded 7,000 SARS-COV-2 cases and 336 deaths. As in detail, one individual of five was treated by the health system (www.bbc.com). It is in such conditions that this country was performing the first anti- and post-infection ‘reopening’ in the chronological order in the whole Europe. Nevertheless, about a half of primary schools, nurseries and care centres reopened had moved away meanwhile from their initial locations.

To be here noted both that it is here talking about ‘reopening’ – i.e. something more than ‘relaxation’ – and that Denmark here associates with Austria. Actually Denmark ‘reopened’ immediately after Austria while all these anti-SARS-COV-2 operations had started immediately after the Easter feasts in both countries (a report by Jacob Gronholt-Pedersen and Stine Jacobsen, editors Nick Tattersall and Grant McCool.).

Figure 6. Denmark: Covid-19/ New daily cases



Source: by the author, based on Eurostat

Reopening versus relaxation. Prime minister, Mette Frederiksen, expressed his option for what he was calling a ‘prudent reopening’ and that started on April 15 for which date the virus’ evolution was foreseen for certain stabilization.

Employees back to work Government started talking with business leaders about an equally gradual comeback of employees. That was intended in parallel with keeping on, for a couple of months, at least some of initial restrictions. Basically, Government was keeping aware of the need for balancing between the people’s health ensured and that of directly facing the inevitable economic crisis and its appropriate risks.

Activities reopening This time Government discussions were with political leaders, namely with opposition leaders, aiming a political decision consensus about which ‘to be opened’ and which not yet (www.bbc.com). First were reopened the hairdressers’, the tattoo shops and schools of driving. Then there came physiotherapists, psychologists, opticians, foot medicine, massage parlours; and then, piercing studios and chiro practitioners. In the end, courts and tribunals reopened on April 27. Unfortunately still no mention about reopening restaurants and schools for over 12 years old boys and girls. In

exchange, for those under 12 year old establishments were reopened on April 15, and that in order their parents' going back to work.

Social distancing for children. When this situation is gradually approached for children too washing hands could become a good 'routine', e.g. about doing it every two hours daily. Then, those of the same classroom or group in school or nursery give up hugs and toys get little by little no longer used in common. Some of these might remain home, but finally there might be toys used in common – these would be supposed to be cleaned at least twice a day. Playing and even teaching would be better outdoors, where desks two meters apart (www.thelocal.dk).

Restaurants. This industry is suffering hard in pandemic and, of course, this is not only in Denmark. Future becomes deeply uncertain for this sector. Plus, the last was stroked as a whole, says Kasper Bundgaard Christensen, the owner of two large restaurants called 'Hooked' in Copenhagen. Since all large events planned, including festivals, were forbidden or cancelled that was all we had in our year calendar. All we've got currently is the 'take away' and direct sales to buyers, plus hope for some growth of this side up to the summer season. On the other hand, we sent home twenty people that stay on our payroll due to that *compensation scheme* avoiding dismissals. Actually, we pay 10% of wages, the rest is paid by Government, adds Mr. Christensen.

Others. Government was equally giving up the above mentioned *compensation scheme* – i.e. financial aids -- for firms restarting their activity. Families were allowed to pay visits to old people and to children again. Online registration for haircutting and hairdressing that had been for the crisis time (ordering.nu) came to be abolished (It was announced in Ekstra Bladet report. The publication mentions that the list of those registered had been registered in full on the same date. According to the Prime Minister, Mette Frederiksen, such a situation would be like imagining a "tight column of people" who would have problems with both the "state on the spot" and the eventuality of "running".)

Lars Sandahl Soerensen, leader of the Industries' Confederation in Denmark, believed that something more should be here needed. The more "gradual" the government's approach, the greater the need for "survival assistance", he said. The government's reply, of course, came from Prime Minister Mette Frederiksen: 'If one reopens Denmark, one risks a more pronounced return of the virus that makes the well-known quarantine come back', he said implying that the alternative of a return always means extended time and many other rules. In an intervention on public radio, prime minister added: "I don't really believe in a full return to that 'normal' life before the Corona-virus".

4.7 Norway

Norwegian Prime Minister Ema Solberg said: “Norway has managed to regain control of the virus. From now on we need to maintain it “. Changes implemented were expected within time and in a controlled order. On Friday, April 3, the Oslo Government announced a series of tests for more than 100 thousand persons each and that was enough more than what other small and less populated countries, e.g. Iceland or United Arab Emirates, were doing. It was this way that such a specific small country’s advantage in mass testing was put into value. Experts found this as part of the country’s success in this strategy (www.euractiv.com).

Figure 7. Norway: SARS-COV-2/ New daily cases



Source: by the author, based on Eurostat

On the contrary, relaxation measures were announced on Tuesday, April 3. That was for reopening schools, universities and technical colleges on April 27. Services needing personal contact, e.g. hairdressing or physiotherapy, were planned for a gradual reopening while sports and cultural activities, in which masses are likely to involve, were coming to stay restricted at least up to 15 June. The same as in Denmark here children were benefiting of a special attention. Plus, to be about new enlarged testing and about a new application for monitoring the infection named ‘*Smittestopp*’ (“Stop the contagion!”) A facebook group calling itself “*My child will not be the guinea pig for the Covid-19 tests*”, ended up gathering several thousand members who feared for their children’s health.

5. Conclusions

It is to reiterate from above that this current SARS-COV-2 pandemic is one and political reaction against it quite multiple, here including within Europe and within the European Union. The latest one (E.U.) understood its role and engagement for unifying measures taken within its region, but today situation stays diversified by countries and regions. Besides, Europe remains just a piece in a world equally facing the same pandemic. Last, but not least, debate and attitudes all over deepens concomitantly, that might be good or not on all time terms.

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FINANCIAL STATEMENTS – OBJECT OF THE FINANCIAL AUDIT

Emilia VASILE, PhD Professor
Athenaeum University, Bucharest, Romania
rector@univath.ro

Ion CROITORU, PhD Associate Professor
Atheneum” University of Bucharest, Romania
ion.croitoru.ag@gmail.com

Abstract: *Financial information is useful both inside the organization (management) and outside it (customers, suppliers, creditors, banks, investors, etc.), which plays an important role in making financial, managerial decisions and the development of a business. Currently, the demand for relevant and real financial information is increasingly stringent, and access to correct and relevant information is in many cases hampered by misreporting. The financial statements must present a true and fair view of the assets, liabilities, financial position, financial performance, cash flows, results of the management of the resources and the profit or loss of an economic organization. The purpose of the financial audit is to examine the financial statements of an organization and to express a responsible and impartial opinion on the true and fair view, ie whether all transactions and economic transactions underlying the recording of information in the financial statements are accurate and consistent. the legal provisions in force. In this regard, the financial audit is responsible for providing management information to the organization to assist it in making decisions and optimizing them, to evaluate the operations and economic transactions carried out by the organization and to implement corrective measures to eliminate existing malfunctions, as well as to to issue an opinion on the reality of the financial statements issued by the organization.*

Keywords: *financial audit, financial auditor, financial activity, financial information, audit risk, financial statements, users of financial information*

JEL Classification: *M40, M41*

Financial statements - summary documents of the financial activity

The financial statements are official documents presenting the situation of an organization's assets, prepared in national currency, according to the legal regulations in force and which present the financial position, financial performance and cash flows. Based on these documents, users obtain financial-accounting information about the organization, necessary for decision making. The financial statements contain the balance sheet, the balance sheet income statement, the statement of cash flows, the statement of changes in the structure of assets / capitals, annexes to the financial statements, the budget execution account.

The balance sheet shows the assets, liabilities and equity of the organization at a given time (the date on which it is closed). Current assets and liabilities are presented separately from non-current assets and liabilities. Equity called net assets is determined as the difference between assets and liabilities. The balance sheet includes information on the structure of the elements that generated that result, namely the statement of income, financing and expenses during the current year.

The statement of cash flows includes cash flows from operating activities, cash flows from investing activities and cash flows from financing activities. The statement of changes in the structure of assets / capital includes information on the structure of equity, influences resulting from changes in accounting policies, influences resulting from revaluation of assets, calculation and recording of depreciation or correction of accounting errors (Order of the Ministry of Public Finance No. 2876/2019).

The annexes to the financial statements include the accounting policies and explanatory notes that contain information not found in the financial statements.

The budget implementation account contains financial transactions relating to revenue received and payments made.

The main data source for the preparation of financial statements is accounting, which is the basic tool for knowledge, management and control of assets and results obtained by an organization (Feleagă & Ionașcu, 1998) and which has as general objective of prepare and prepare financial statements.

The role of the financial audit is to issue an opinion on the financial statements or of some of their components, respectively if the economic operations that were the basis for the elaboration of the financial statements are correct and in accordance with the provisions of the law. The financial audit also gives users confidence in the accounting information and ensures

that the accounting information is processed and presented in accordance with generally accepted accounting regulations and standards.

The financial audit verifies and certifies the financial information, on the one hand, in order to issue an opinion on the reality of the financial statements, and on the other hand, in order to protect the assets and ensure the credibility of the information provided.

The information in the financial statements, in order to be credible, must be validated or compiled in accordance with generally accepted accounting standards and principles and be certified by financial auditors.

Fidelity of financial statements - object of financial audit

Financial reporting provides financial information about an organization's economic situation. This information made available to the various investors, lenders or creditors may make decisions as to whether or not it is in the interest of the organization concerned. Those decisions may relate to the purchase or sale of capital, debt, the provision or settlement of loans or other forms of credit.

The regularity and sincerity of the financial statements are not enough to give a true and fair view of them. In this situation, the strict application of the rules and the sincerity of the financial statements provider fully ensures the objective of a true image (Toma, 2012).

In this context, the professionalism and sincerity of the persons responsible for the preparation of the financial statements, as well as of the persons who endorse and approve the financial information, also contribute to achieving the objective of a true image.

Financial auditors, if they monitor and evaluate whether the regulations in force are correctly applied, become responsible for the veracity of the information contained in the financial statements, which leads users to trust that they use complete, verified and certified information. If the information is not complete and correct, users, through the decisions taken, may record losses (Rittenberg & Schwieger, 2005).

The financial auditor who evaluates the financial statements prepared in accordance with IFRS, in order to ensure the efficiency of the audit activity, respects the risk-based approach. They direct their audit work towards key, significant risks, where the probability of errors in transactions and account balances is high or if the risks are distorted in the financial statements is significant.

To be credible, the information in the financial statements must be validated in accordance with generally accepted accounting standards and

principles. It entails professional responsibilities, compliance with the code of ethical and professional conduct in the field of financial audit, as well as carrying out the financial audit mission independently and in compliance with the relevant ethical requirements.

The financial auditor, in carrying out his mission, assumes that the responsibility of the organization's management is to prepare and present the financial statements in accordance with the financial reporting framework, and the financial auditor's responsibility is to formulate and express a correct opinion on the financial statements. In this regard, it collects and evaluates evidence and expresses its opinion on the sincerity of financial information, as well as on the clarity and completeness of assets.

In conclusion, it can be considered that the financial audit is an examination of the financial statements of an organization by an independent professional, who formulates a responsible and impartial opinion that economic operations and transactions are fair and in accordance with the law.

The role of the financial audit is also to give users confidence in the accounting information and to ensure that it has been processed and presented in accordance with generally accepted accounting regulations and standards.

Audit risk in auditing financial statements

In order to improve the quality of the accounting information provided by organizations, it is important that users of this information also have an overview of the risks to which the organization is exposed and the measures to manage them (Vasile & Croitoru, 2018).

Audit risk, in the practice of financial audit, is inevitable and represents the risk that the financial auditor will formulate a wrong conclusion, but which he assumes. According to international auditing standards, audit risk can have three components: inherent risk, control risk and non-detection risk.

The inherent risk is the likelihood that an account balance or a category of transactions will contain a misstatement that could be material, individual or cumulative with the misstatements in other balances or categories of transactions, assuming that there were no adjacent internal controls.

Control risk is the risk that a misstatement, which may occur in the balance of an account or in a category of transactions and which may be significant individually, or when combined with other misstatements in other balances or categories, it cannot be prevented or detected and corrected in a timely manner by the accounting and internal control systems. Undiscovered risk is the risk that an auditor's substantive procedures will not detect a misstatement that

exists in the balance of an account or category of transactions and that could be significant individually, or when combined with misstatements in other balances or categories of transactions.

It often happens that the management of the organization deliberately chooses to omit some significant financial aspects or even to apply accounting policies that misrepresent information in the annual financial statements. This practice is known as creative accounting in the literature and accounting practice and is generated by certain deficiencies or ambiguities of accounting norms or standards (Shah, 1998).

Generally, creative accounting occurs when managers, who have knowledge of financial reporting and structuring operations, manipulate financial statements in order to mislead certain stakeholders about the organization's financial performance or to influence some contractual results that depend on the figures. reported financial. This practice affects users of financial information by providing incorrect information.

During the financial audit mission, greater attention should be paid to increasing the credibility of the information contained in the financial statements and significantly reducing the risk of misrepresentation. The financial auditor must maintain an attitude of professional skepticism throughout the audit, apply audit procedures that are effective in detecting errors and fraud, and carefully verify accounting documents and records to ensure their authenticity.

The contribution of financial audit to improving financial statements

Users of financial information have access only to published financial information, and their decisions depend on the accuracy of the reported financial statements. In many cases the reported financial information can be manipulated and its users misinformed.

In these situations, users of financial information rely heavily on financial audit, which aims to reduce the risk of information and to verify and certify financial information. The financial auditors shall verify the information received from the organization and ensure that it does not contain elements of fraud or error.

Thus, we can appreciate that auditors do not have a direct influence on economic risk, but they have a significant influence on information risk (Oprean, 2010).

Improving financial audit practices is necessary and useful because, together with a modern accounting system, they can withstand economic crisis situations that may affect the global economy. The financial audit identifies

inconsistencies in the conduct of activities and their causes, and through corrective and preventive measures applied, can avoid non-compliance and keep under control the processes carried out by the organization.

An organization with a weak internal control system is exposed to major uncontrolled risks, while an organization that has implemented an effective internal control system has identified and maintained significant risks within acceptable limits, a situation that leads to credibility, profit and competitiveness. the market in which it operates.

The financial audit must progress in relation to the changes that affect economic life, to anticipate, prevent and provide explanations and recommendations to the problems that the organization, with which it has a committed commitment, faces.

According to international auditing standards, the value of an organization is given by customer relations, employees and innovation, operational performance, intellectual property, brand reputation and the organization's chain and distribution lines (IFAC, 2015).

Non-financial aspects are not included in the financial-accounting reports. The financial statements are based on maintaining and increasing transparency and investor confidence and less on adequate and sufficient information on the activities carried out. Under these conditions, the financial-accounting function must be efficient and contribute greatly to the success of the organization, respectively to provide a credible perspective, a performance analysis, a risk management, an efficient communication, as well as trust, integrity and professionalism. (IFAC, 2019, A Vision for the CFO & Finance Function). The demand for relevant and real financial information is increasingly stringent, and access to accurate and relevant information plays an important role in the development of an organization. The financial information must provide a complete, real and accurate description of the economic activities carried out by the organization.

Despite all the efforts made by the bodies responsible for accounting, to increase the quality and transparency of financial information, there are still some practices of improper application or even willful breach of the rules.

In these situations, the role of the financial audit is essential, it must professionally verify the information provided by the organization, as its reputation, integrity, sincerity and objectivity may be jeopardized. If the financial auditor violates these fundamental principles that govern their work, the result is a lack of trust in users in the quality of the information provided.

The persons interested in the financial audit report are represented by creditors, governments, employers or employees, investors, the business

community, etc., and they are based on the objectivity and integrity of financial auditors in formulating their opinion on the quality of financial information provided by the organization.

An essential role in ensuring the reputation of financial auditors is generated by the good preparation, the quality of the work performed, their integrity and objectivity manifested in professional practice, as well as compliance with current legislation, application of relevant standards and directives issued in this regard.

Improving the financial audit report contributes to the relevance of the information contained in the financial statements and to increasing the level of transparency, which allows users of financial information to better appreciate the value of the financial audit.

Conclusions

The financial auditors in their work have the responsibility to correctly apply the regulations in force and the standards of good practice, in order to become guarantors of the veracity of the information provided by organizations and to contribute to increasing users' confidence in reported financial information. The financial auditors respect the risk-based approach in auditing the financial statements, which ensures the efficiency of the audit activity. The objectives of the financial audit mission are aimed at high-risk, significant activities, where errors in transactions and economic operations may lead to distortions of the financial statements.

By applying specific audit procedures and techniques and respecting the general principles of financial audit and code of ethics, the financial auditor can reduce audit risks and help increase users' confidence in using complete, verified and certified information.

In addition to the financial information contained in the financial statements, it is necessary for users to have access to forecast information. In addition, in order to improve the quality of the accounting information reported by organizations, users must have an overview of the organizational risks to which the entity is exposed, including the management measures applied.

The responsibility of the financial auditors is to ensure that the accounting information of the financial statements of the audited organization is true, given that on the basis of this information external users make various decisions that may affect them. In this context, the improvement of financial audit practices is necessary and useful, and financial auditors should show an attitude of professional skepticism, especially in situations where they find errors and inconsistencies in the conduct of audited activities.

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DEMOGRAPHIC CHARACTERISTICS OF INTERNATIONAL MIGRANTS

Brîndușa Mihaela RADU, PhD Associate Professor
Athenaeum University, Bucharest, Romania
bmradu@yahoo.com

Abstract: *In the coming decades, international migration remains a real process and may vary, taking into account political and economic changes, innovative technological and social changes, growing demographic imbalances, the effects of climate change and globalization trends. In order to increase the positive effects and minimize the negative effects in the field of labor migration, the following aspects can be identified: stimulating return migration and circular labor migration; creating favorable conditions for the business of returned migrants and the development of SMEs in the regions; adapting national educational policies to the needs of the labor market; more active and effective involvement of the diaspora in development policies (Anghelache et al., 2016). Romania has been and is a country of origin or transit in migration flows. Its entry into the group of EU member states coupled with the increase in revenue will certainly lead to a change in this situation. Taking as an example country like Spain or Italy and more recently Poland, Hungary or Slovakia after joining the EU in 2004, Romania will become both a source and destination country so that the number of emigrants will be exceeded by the number of immigrants (United Nations, 2015a). That is why I consider it appropriate to analyze the demographic structure of emigration and immigration of the population.*

Keywords: *Labor force migration, demographic structure of migrations*

JELClassification: *J1, J61, C33*

Introduction

The statistics regarding Romanians leaving the country are unclear and contradictory. It is usually accepted that the Ministry of Foreign Affairs (MFA) is responsible for keeping track of Romanian citizens abroad and also

responsible for maintaining relations with Romanian communities established around the world. In fact, the MFA speculates on the number of Romanians settled abroad, in one form or another (United Nations, 2015b).

There are two reasons why the Romanian Government cannot officially establish the number of Romanian immigrants. First of all, the Romanian legislation guaranteed to the Romanian citizens the right to free movement. Romanian citizens traveling abroad are not obliged to declare why they are leaving the country, where they are leaving and what the purpose of the trip is. There is a general recommendation for Romanian citizens, especially those who intend to settle abroad for a long time, to register for one of Romania's diplomatic or consular missions. But in reality, this recording is not complete. Secondly, since Romania's accession to the EU, Romanians' travels within the EU are absolutely free.

A Romanian can travel inside the EU even without a passport, as a regular identity card is enough for him to check at the border. Statistics show that the main countries chosen by Romanian immigrants are EU member states, especially Italy and Spain. The explanation is that Italy and Spain have passed the stage of economic growth, offering Romanian workers higher salaries than they could receive in Romania. Also, the cultural similarity between Italy, Spain and Romania (in terms of language, customs, lifestyle, etc.) was perceived as an encouragement. In general, Italians and Spaniards were very tolerant of Romanians, who felt comfortable and did not have to face significant obstacles in their integration intentions (Aceleanu, 2011). It should also be mentioned that Italy and Spain were among the first EU countries to open their labor markets for Romanian citizens. In addition to Spain and Italy, significant communities of Romanian immigrants could be found in Germany, France and the United Kingdom.

Also, Romanian immigrants tended to reach beyond European countries, especially in New Zealand, Australia and Canada. However, the United States remains an important destination country for Romanian immigrants. According to estimates, the number of Romanians who settled abroad varies from 1,5 to 5 million. It is generally estimated that 70-75% of them are in EU countries (Eurostat, 2019). Due to the lack of statistical data, it is difficult to determine the impact of Romania's EU accession on the migration flow. But, without a doubt, the opening of the labor markets for Romanians in Europe was perceived as a great opportunity for many of them. Following EU accession, there are important reasons to consider that the outflow of migration has increased considerably. In October 2017, Mr. Johan Ten Geuzendam, Head of the Labor Monitoring Directorate at the EU Commission, said that about

850,000 Romanians work in the European Union and are largely represented by unskilled workers. In fact, Mr. Geuzendam pointed out that they are even less skilled than the most unskilled workers in the EU (Business Standard, 1 October 2017).

In the World Bank Report, prepared at the end of 2017, Romania ranked 10th among the countries in the world, in terms of money remitted by emigrants: 6.8 billion USD (World Bank, 2019). All the figures, to which is added the general social perception, allow us to conclude that the Romanians took full advantage of the opportunity that was offered to them with the accession to the EU in terms of free movement. Also, according to the social perception, the main social category of those who emigrated for economic reasons in recent years was composed of young people (around 30 years old), with poor skills, coming from rural areas or deprived of citizens' rights. They also did not emigrate forever, as long as they continued to send money back to their communities, build houses and buy real estate.

Also, the fact that Romania has faced a large flow of emigration (World Bank, 2013), illustrated by the many dramatic stories brought by the media about children left under the supervision of relatives by emigrated couples. In this regard, many social problems have arisen in recent years and public opinion urges the Government to develop a social policy for these children. The economic impact of labor migration in Romania has not yet been assessed in appropriate terms (European Institute of Romania, 2004). The only thing that is certain is that the volume of remittances increased continuously until 2016. In 2012, the volume of remittances was estimated at approximately 1.5-2 billion USD, Romania being ranked 23rd in the top of the 30 developing countries with high volume of remittances received during that period. Recent reports have shown that since then the volume of remittances has practically tripled: the National Bank of Romania reported a record amount of EUR 4.8-5.3 billion for 2016. It seems that most of this money is used to improve general living standards of migrant households, and only a small part is invested in entrepreneurial activities (www.jdre.ase.ro/revista/JDRE3_ro_2011.pdf).

Regarding the positive economic aspects for households, the widespread involvement of Romanians in labor migration has several negative consequences at the same time, especially on the lives of affected families. Probably the most complicated issue is the temporary abandonment of minors by their migrant working parents. In the early 1990s, there was a tendency to migrate to a single member of the household, so only one family member (usually the father) was absent (Massey, Arango, Hugo, 2012). It is certain that since then, the number of women involved in labor migration has increased. It

is now common for couples to emigrate, leaving minors without direct parental supervision. These children are not necessarily abandoned; rather, the role of parents is assumed by relatives, neighbors or friends. However, the lack of direct parental supervision has led to an increase in the number of social problems among children and adolescents, and the authorities responsible for child protection have been forced to formulate policies to monitor this situation. At the end of 2016, approximately 60,000 children were identified by the National Authority for the Protection of the Rights of the Child as being at risk because both parents work abroad; In one third of the cases (21,400), the children were deprived of both parents.

At another level, recent political discourses have recognized the problems of emigration. Any big party in Romania discusses this phenomenon based on two main ideas. The first is to complain that Romanians are leaving Romania due to unsatisfactory local conditions. The second is to return them. In fact, we are currently witnessing a real competition between the political leaders regarding the return of the Romanians who left Romania in the last years. It is reasonable to say that in the coming years a considerable number of Romanians will continue to emigrate. It is also reasonable to mention that the main target countries of Romanian immigrants will remain unchanged. On the other hand, Romania's economic growth and recession in some countries preferred by Romanians could blur the process (Massey, Arango, Hugo, 2012). The renowned expert Mr. Rainer Munz, Head of Research and Development with Erste Bank, recently said that for Romanians, emigration to Western Europe will lose its meaning in the future. We may soon find ourselves in a situation where countries such as the Czech Republic, Poland or Slovenia will report more immigration than emigration.

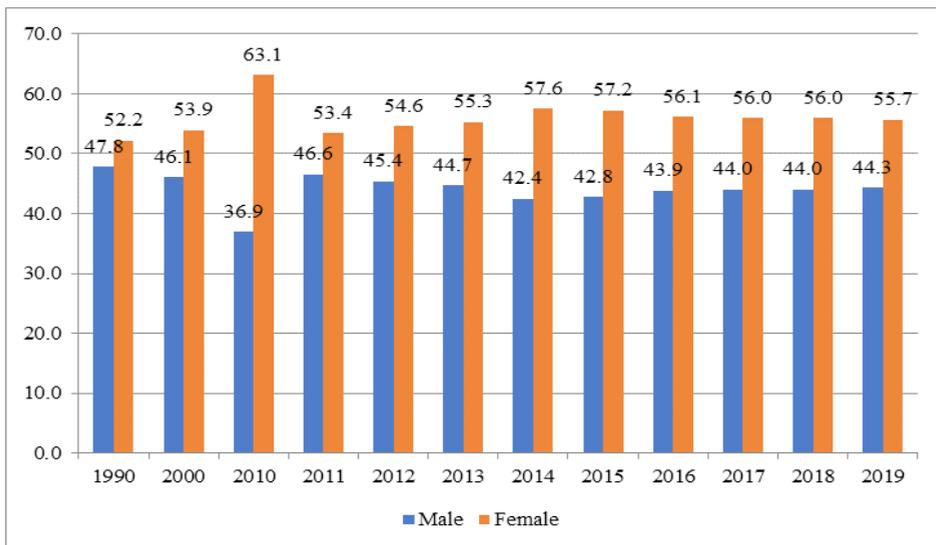
Emigrants - by sex, age groups, nationalities

In 1990, immediately after the free movement of persons was regulated, there was a massive emigration of the population from Romania to abroad. Thus, in 1990, 96929 people chose to emigrate from Romania, respectively 4 people out of 1000 inhabitants decided to change their domicile outside the country. In the next 4 years, the number of emigrants decreases, reaching that in 1994 the number of departed persons is below 18000 and under 1 emigrant per 1000 inhabitants, while in 1995, the number of emigrants from Romania increased to over 25000 respectively to 1,13 emigrants per 1000 inhabitants. It should be noted that the year 1995 remains a milestone in terms of the extent of the emigration phenomenon, as so far this value has not been exceeded. Therefore,

in the last 10 years, as a whole, the number of people who have decided to emigrate to another country is decreasing, oscillating around the value of 10000 people and 0,5 emigrants per 1000 inhabitants (www.jdre.ase.ro/revista/JDRE3_ro_2011.pdf).

The gender distribution of emigrants shows that for the entire analyzed period, the external migration of the female population predominates (with the exception of 1992 and 2001, when only approximately 49% of the emigrants were women). If in the first 10 years after the revolution, the share of women in the total number of emigrants was 52,3%, after 2000, as can be seen in Figure 1, the emigration flow is characterized by a high degree of feminization, their share reaching 63,1% for 2010. It can also be noted that the share of women in the total number of people who decided to emigrate is constantly increasing (compared to 1990).

Figure 1. Distribution of Romanian emigrants by sex

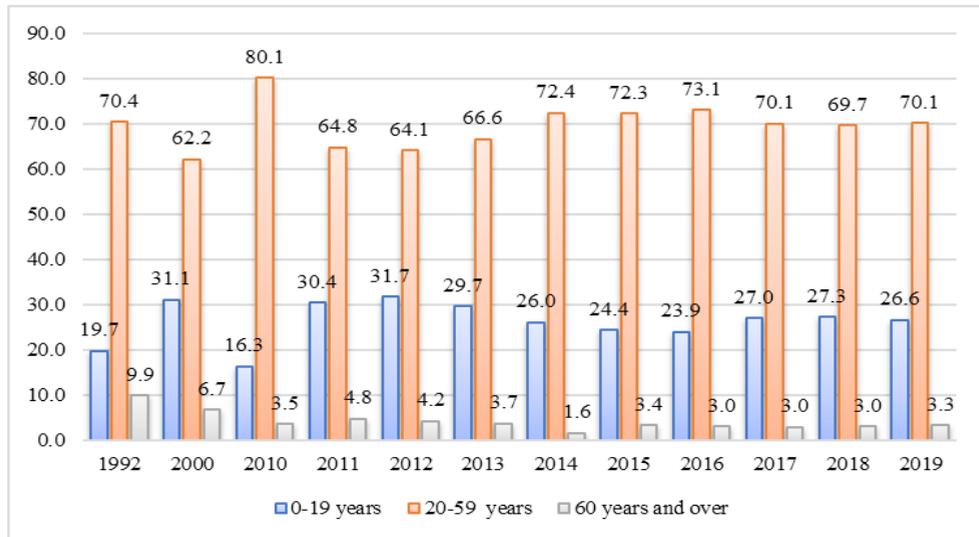


Source: TEMPO online base, <http://statistici.insse.ro:8077/tempo-online>, own calculations

Regarding the distribution by age groups of emigrants, it can be observed that people between 20 and 59 years old are the most active from this point of view, while the share of the population aged 60 and over is much lower (European Institute of Romania, 2004). In the first years after the revolution, the migrant population of working age (20-60 years) represents in fact young families because with them they chose to emigrate in a high proportion, over 60%, and their children who are part of the category

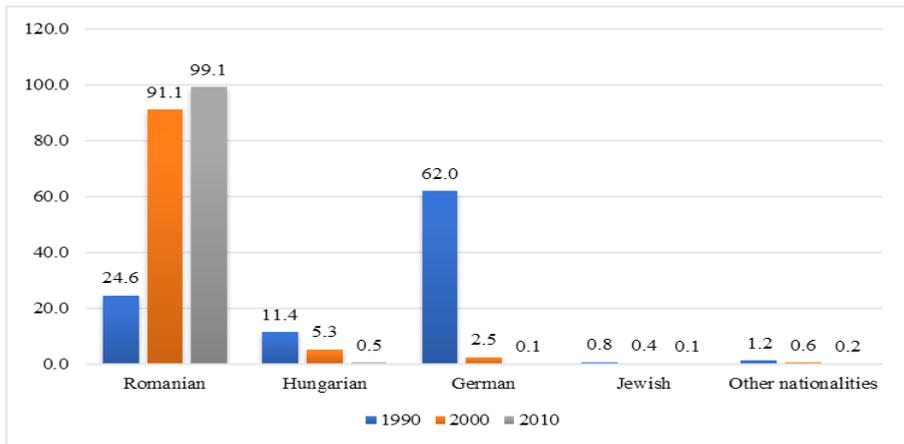
population under 19 years (National Institute of Statistics, 2017). This phenomenon of emigration of the whole family was characteristic only of the period 1990-2000, as after 2000 the share of people under 19 decreased (the lowest value being recorded in 2010 representing 16,3%), after a new increase of the proportion reaching a maximum in 2012 (31,7). In the last 6 years this value oscillates around 25% (Figure 2).

Figure 2. Distribution of Romanian emigrants by age groups



Source: TEMPO online base, <http://statistici.insse.ro:8077/tempo-online>, own calculations

The distribution of emigrants by nationality reveals that immediately after the regulation of the free movement of persons, the population of other nationalities, especially persons of German nationality, chose to change their domicile, respectively to leave Romania. Thus, if in 1990, out of the approximately 97 thousand registered emigrants, 62.0% were persons of German nationality, and 11.4% of Hungarian nationality, while the population of Romanian nationality represented 24.6%, after 2010, almost all emigrants (over 99%) are of Romanian nationality (Figure 3). In economic, social and cultural terms, the departure of the Germans had an obvious local impact, the social structures of the communities in the Saxon and Swabian localities being strongly transformed. Their homes were purchased by Romanians who came, mostly from Moldova and Maramureș, or by other locals.

Figure 3. Distribution of Romanian emigrants by nationalities

Source: TEMPO online base, <http://statistici.insse.ro:8077/tempo-online>, own calculations

Immigrants - by sex, age groups, country of departure

Immediately after 1990, in Romania, the flow of immigrants was almost non-existent, the number of people who decided to settle legally in Romania oscillating around 1500 people and 0.05 immigrants per 1000 inhabitants (Table 1).

Table 1. Evolution of the total number of immigrants settled in Romania

	1991	2000	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	1602	11024	7059	15538	21684	23897	36644	23093	27863	50199	65678	64479
Male	581	5612	4242	9505	12962	13643	20321	13289	16116	28586	38698	35705
Female	1021	5412	2817	6033	8722	10254	16323	9804	11747	21613	26980	28774

Source: Baza TEMPO on line, <http://statistici.insse.ro:8077/tempo-online>

After 1995, the flow of immigration gradually intensified, reaching in 2001 to exceed the number of over 15000 immigrants, representing about 0,7 people per 1000 inhabitants. In the following period, the evolution of the number of immigrants continues to increase, much faster after 2017, a year in which there was an almost double number compared to the previous year, in 2019 there were a number of 64479 immigrants who settled in Romania.

In the first post-communist decade, Romania had a relatively low level of immigration. Those who immigrated to our country during this period were mostly entrepreneurs, especially from Turkey, Syria, Jordan and China. The economic changes have determined the increase of Romania's attractiveness for foreign entrepreneurs, but also for other categories of less specialized

foreigners. After 2000, the number of work permits increased from 1580 to 3678 in 2005, reaching 7993 at the end of 2016. The situation of foreign citizens who are in Romania with a legal status differs greatly from one year to another (Aceleanu, 2011).

In 2019, 64479 foreign citizens had legal residence permits in Romania, originating from: Republic of Moldova - 38205 people (59,3%), other countries - 16162 people (25,1%) (and among other countries we mention: China 6124 people (9,4%), Syria - 2,505 people (4,37%), Tunisia - 1475 people (2,58%), Lebanon - 1443 people (2,52%)), Ukraine - 6196 people (9,6 %), Italy 1123 people (1,7%) (Table 2). In mid - 2019, 42953 EU citizens resided in Romania. They were originally from: Italy 9546 people (22,22%), Germany 6919 people (16,11%), France 5319 people (12,38%), Hungary 3448 people (8,03%), Austria 2715 people (6,32%), Great Britain 2263 people (5,27%) Bulgaria 2139 people (4,98%), Greece 1904 people (4,43%), Spain 1519 people (3,54%), Poland 1249 people (2,91%), other countries 5932 people (13,81%).

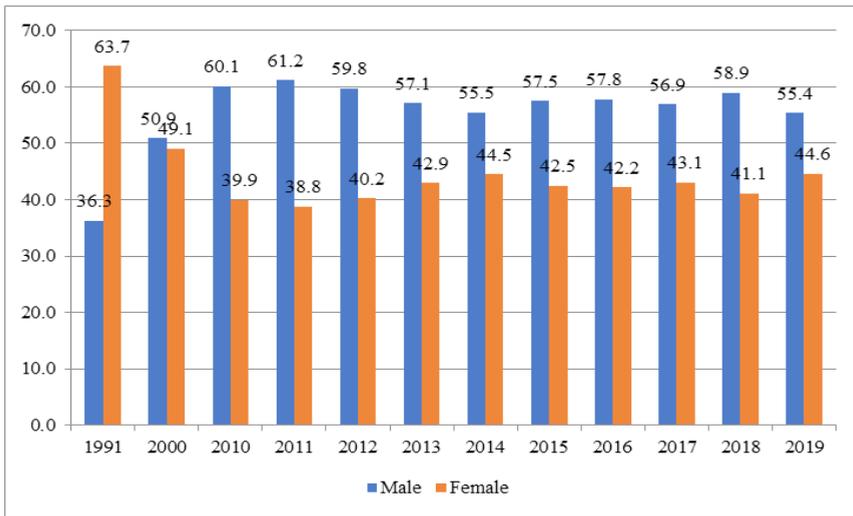
Table 2. Distribution of immigrants settled in Romania, by country of origin

	2000	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Austria	0,8	1,6	0,5	0,2	0,3	0,2	0,6	0,5	0,3	0,3	0,3
Canada	0,5	3,3	1,4	0,6	0,6	0,6	1,3	1,1	0,7	0,5	0,6
France	1,0	2,1	0,9	0,4	0,4	0,4	0,9	0,9	0,5	0,4	0,5
Germany	2,1	6,2	2,3	1,3	2,8	0,7	2,0	2,1	1,4	1,2	1,5
Israel	0,5	1,5	0,8	0,3	0,4	0,3	0,6	0,5	0,2	0,2	0,2
Italy	0,6	18,0	4,5	2,2	2,3	2,4	5,7	4,6	2,3	1,6	1,7
Republic of Moldova	83,0	28,0	57,4	78,1	84,0	54,9	62,1	63,6	60,8	56,0	59,3
US	1,5	6,1	3,1	1,4	1,4	1,0	2,1	2,1	1,1	0,9	0,9
Ukraine	5,9	0,6	6,5	2,3	2,9	3,0	5,3	4,2	9,7	13,8	9,6
Hungary	1,6	4,2	1,6	0,8	0,7	0,4	1,0	0,8	0,5	0,3	0,3
Other countries	2,6	28,5	20,9	12,5	4,4	36,1	18,5	19,6	22,6	24,8	25,1

Source: TEMPO online base, <http://statistici.insse.ro:8077/tempo-online>, own calculations

The gender structure of immigrants shows that during the whole period analyzed most of the immigrants are men (with the exception of 1991, when only about 36,3% of immigrants were men). If until 1997, the share of men in the total number of people who decided to settle in Romania was around 60%, in the period 1998-2019, as can be seen in Figure 4, the share of men decreases to about 55,4%.

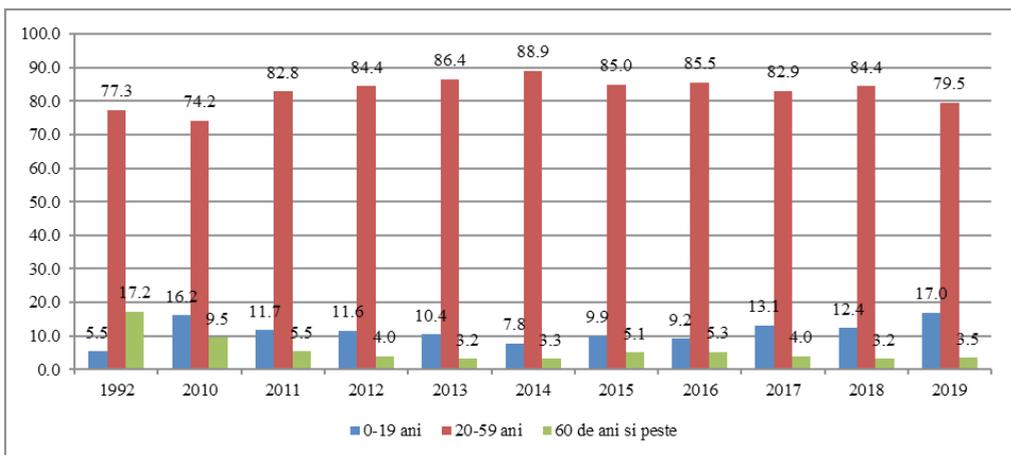
Figure 4. Distribution of immigrants from Romania by sex



Source: TEMPO online base, <http://statistici.insse.ro:8077/tempo-online>, own calculations

Regarding the distribution by age groups of immigrants, it can be seen that throughout the period, people between 20-59 years are the most active in this regard, while the share of the elderly population aged 61 and over is almost non-existent. (less than 5%). In 1991, the working age population (20-59 years old) represented, in fact, young families with children, as together with them they chose to settle in Romania in a high proportion, of approximately 80% (this proportion having variations above or slightly below this figure), and their children belonging to the under-19 population category (Figure 5).

Figure 5. Distribution of immigrants from Romania by age groups



Source: TEMPO online base, <http://statistici.insse.ro:8077/tempo-online>, own calculations

The balance of external migration by sex confirms that for the entire analyzed period the male population predominates in the immigration flow, as the negative balance of external migration in women is higher compared to that registered in men. If in the first 10 years the balance differences are small (up to 30%), with women registering only a slight advance, after the year 2000 the negative migratory balance increases for females, while for men it has higher values. small being even positive in the last 10 years.

The balance of external migration by age groups reveals that, during the analyzed period, the structure of external migration flows changes. Thus, if in the 1990s, the intensity of the migration flow abroad is high for children under 19 and young people aged between 26 and 40 (the balance of external migration is negative and has high values), and as it progresses In age, the intensity of the flow decreases (in people over 41 the values of the migratory balance are lower and closer in value), in 2019, the tendency to go abroad is present only in the working age population between 26-40 years , since in the other age categories, especially in the population over 41 years old, the number of Romanians who choose to emigrate abroad is lower than the number of foreigners who decide to settle in Romania.

Conclusions

One of the most visible effects, with a high impact on migration flows, is the evolution of the labor market. Both massive labor migration and the aging process are currently affecting labor supply.

Among the issues highlighted in this chapter were the demographic characteristics of international migrants. It was found that the share of women in the total number of emigrants is over 52%, and after 2000, we find a high degree of feminization, the share of women exceeding 60%.

The overwhelming share of migrants is in the age group of the active population, followed by the population under 18 years. In other words, we are witnessing the phenomenon of emigration of the whole family.

After 2001, Romania became an increasingly attractive country for immigration, especially for immigration for work purposes, with a sharp increase in employment contracts in this category.

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INFRINGEMENT PROCEDURE – THE CASE OF ROMANIA

Luciana BEZERIȚĂ (TOMESCU), PhD Lecturer
Athenaeum University, Bucharest, Romania
luciana.tomescu@gmail.com

Abstract: *In this article, we propose to present the stages of application of the Infringement Procedure against the member states of the Union that fail to fulfil the obligations arising from the legislation of the European Union. Under the provisions of the Treaty of Lisbon, the European Commission has the power to initiate this procedure ex officio or following a referral and decide to refer the case to the Court of Justice of the European Union, if the Member State concerned does not take the necessary measures to comply with Union law. Failure to comply with a judgment of the Court of Justice by the Member State concerned, shall enable the Commission to refer the case back to the Court of Justice and to propose that the Court impose financial penalties. Also, if the Member State does not communicate in time the measures taken to transpose the provisions of a European Directive, the Commission may request the Court to apply financial penalties to that State. The case of Romania regarding the application of this procedure, known as "Infringement", is presented in detail in the monitoring documents published by the European Commission, such as the 2019 Annual Report on monitoring the implementation of EU law, which provides official data and information on the evaluation and ranking of the Member States of the Union in this matter, from which we will capture some comparative aspects that we consider to be significant and relevant. Last but not least, we will present some recent exemplary situations of application of the Infringement Procedure, in the case of Romania.*

Keywords: *Infringement Procedure, European Commission, Court of Justice of the European Union, Annual monitoring report, case of Romania*

Introduction

The term "*Infringement*", derived from English, translated into Romanian "*încălcare*", has its origin in the verb "*to infringe*", which means "*to violate*" (Amariei, 2018).

In other words, this term means a breach of European law by the Member States of the European Union (EU), signatories to the Union's Treaties.

Through this procedure, the European Commission fulfils its role of ensuring that Member States comply with/apply and transpose European legislation, in order to harmonize their national law with the primary and secondary law of the European Union.

The use of the term "*Infringement Procedure*" is not unitary, being used either to designate the *pre-litigation/non-jurisdictional* stage initiated by the European Commission, or for the *litigation/jurisdictional* stage, held before the Court of Justice of the European Union, at the both stages.

The sources that trigger the *Infringement Procedure* by the European Commission are: complaints, own investigations and failure to notify the transposition of European directives.

Based on these considerations, this article is structured in three Sections: *Application of the provisions of the Lisbon Treaty on infringement of the obligations arising from membership of the European Union, Compliance of Member States with European Union law in 2019, Recent European Commission decisions on infringement by Romania and Conclusions.*

The choice of the analysed topic takes into account the need to raise awareness among students/stakeholders/European citizens, of the importance of protecting the *public interest*, a desideratum of the European Commission enshrined in the Treaties, based on the principle of *loyal cooperation* within the *rule of law*.

The Commission ensures the monitoring of the implementation of European Union law by the Member States of the Union and has the power to initiate the *Infringement Procedure* as to failure to fulfil the obligations arising from the European law, including where the Member State fails to communicate in due time measures transposing the provisions of the European directives, following the steps set out in the Treaties. If the State concerned does not take the necessary measures within the prescribed period, the Commission may apply to the Court of Justice of the European Union for financial penalties.

Data and information on cases of *Infringement Procedure* are contained in documents published by the European Commission on *monitoring the application of European Union law*, such as the *2019 Annual Report, Romania*

being in the second half of the ranking of Member States (presented in ascending order of procedure number), as regards the number of new procedures opened in 2019 and the total number of procedures opened until 31 December 2019.

At the same time, in the case of Romania, we intend to present some examples from the content of the *2019 Annual Report*, as well as some recent cases, which we consider to be of special interest to our country, both for the targeted areas and for civil society, as a whole.

The scientific approach aims to bring to the attention of the academic and scientific environment especially, and not only, the incidental regulations in such cases, well known in fact, any interested natural or legal person having the possibility to notify the Commission, in any field governed by Union law, in order to protect the *general public and private interest*, the protection of the *democratic rule of law*, traditional European values enshrined in the Treaty of Lisbon.

1. Application of the provisions of the Lisbon Treaty on infringement of the obligations arising from membership of the European Union¹

The legal basis of the *Infringement Procedure* is represented by the provisions of Art. 4 and 17 of the Treaty on European Union (TEU) and Art. 258 and 260 of the Treaty on the Functioning of the European Union (TFEU).

Under the *loyal cooperation principle*, *the Union and the Member States shall respect and assist one another* in carrying out tasks under the provisions of the Treaties, and *Member States shall take any general or special measures* to ensure fulfilment of their obligations under the Treaties or acts of the Union institutions [Art. 4 par. (3) TEU].

The **European Commission** *promotes the general interest of the Union*, takes the necessary initiatives to this end, *ensures the application of the Treaties* as well as the measures adopted by the institutions under them and *supervises the application of Union law under the control of the Court of Justice of the European Union* [Art. 17 par. (1) TFEU].

Recognized as a “*guardian of the Treaties*”, the **European Commission** may issue a *reasoned opinion* if it considers that ***a Member State has breached any of its obligations under the Treaties***, with the State concerned having the opportunity to submit its observations, and **may refer the matter to the Court of Justice of the European Union**, if the State concerned does not comply with the opinion delivered within the time limit set by the Commission [Art. 258, TFEU].

¹ *Treaty on European Union and Treaty on the Functioning of the European Union*, Consolidated Version, Official Journal C 115 of the European Union, Romanian Edition, 9 May 2008. (our translation/processing).

If the Court of Justice of the European Union finds that a Member State has infringed any of its obligations under the Treaties, that State shall be required to take the necessary measures to comply with the judgment of the Court [Art. 260, par. (1), TFEU]. If it considers that the *Member State concerned has not taken the necessary measures to comply with the judgment of the Court*, **the Commission may refer the matter to the Court again**, giving that State the opportunity to submit its observations and indicating the amount of the *lump sum* or *periodic penalty payment* it considers that the Member State concerned must pay according to the situation.² If it is found that the State concerned has not complied with its judgment, the Court may impose on it the payment of a *lump sum* or a *periodic penalty payment* [Art. 260, par. (2), TFEU].

If the Commission notifies the Court, pursuant to Art. 258, considering that *the Member State concerned has not complied with its obligation to communicate the measures transposing a European directive*, the Commission may indicate, if it considers it necessary, the amount of the *lump sum* or *periodic penalty payment* to be paid by that State, according to the situation. If the obligation is found not to be fulfilled, the Court may impose on the State concerned the payment of a *lump sum* or a *periodic penalty payment*, up to the amount indicated by the Commission, the obligation to pay coming into force on the date set by the Court in its judgment [Art. 260, par. (3), TFEU].

1.1. Informal Procedure - Expedite settlement³

If it identifies a possible breach of European Union law, the Commission shall take steps for the *expedite settlement* of the matter through a structured dialogue (*EU Pilot*) with the Member State concerned.

Member States have the possibility to provide the Commission with additional information on possible breaches of EU law, on the basis of which an *expedite solution* can be identified, according to Union law, thus avoiding the initiation of a *formal Infringement Procedure*.

1.2. Formal Procedure⁴

If the Member State concerned does not take the necessary measures to remove the grounds for infringement of European Union law, or if it does

² European Commission, Communication from the Commission - *Application of Article 260 of the Treaty on the Functioning of the European Union, Updating of data used to calculate lump sums and periodic penalty payments to be proposed by the Commission to the Court of Justice in infringement procedures*, available at website: https://ec.europa.eu/info/sites/info/files/file_import/sec_2010_923_ro.pdf.

³ European Commission, *European Commission at Work, Applying EU Law, Infringements*, available at: https://ec.europa.eu/atwork/applying-eu-law/infringements-proceedings/index_ro.htm. (our trans).

⁴ European Commission, *Infringement Procedure*, available at: https://ec.europa.eu/info/law/law-making-process/applying-eu-law/infringement-procedure_ro. (our trans./ processing).

not communicate the measures transposing the provisions of the European directives, the Commission may initiate a **formal Infringement Procedure** following the steps set out in the EU Treaties, each of which ends with an official decision:

- The Commission sends a *letter of formal notice* requesting additional information from the Member State concerned, which must send a detailed reply within the time limit usually set at 2 months.
- If it concludes that the Member State has failed to fulfil its obligations under EU law, the Commission may send it a *reasoned opinion*, formally requesting it to comply with EU law, stating the reasons why the Commission considers that state is in breach of EU law, as well as a request for that state to inform the Commission of the measures taken, usually within 2 months.
- If the Member State does not take the necessary measures to comply with EU law, **the Commission may decide to refer the case to the Court of Justice.**
- In the specific case, where the Member State does not communicate in time the measures necessary for the transposition of the provisions of the European Directive, within the prescribed period **the Commission may request the Court to apply financial penalties to that State.**

If the **Court's judgment** finds that the State has infringed EU law, the national authorities must take action to comply with the Court's judgment.

Failure to comply with a judgment given by the Court of Justice by the Member State concerned shall enable the Commission **to refer the case back to the Court of Justice** after sending a *written warning* to that State.

If the case is referred back to the Court of Justice, the Commission may propose that the Court impose **financial penalties** on the Member State in the form of a *lump sum* (based on the time elapsed from the first judgment) and/or a daily fine/*periodic penalty payment* (until the Member State ceases to infringe).

Regarding the method of calculating the penalties, according to the quoted source, the following criteria are considered:

- *the importance of the rules infringed and the impact of the infringement on the general and private interests,*
- *the period during which EU law was not applied,*
- *the Member State's ability to pay.*
- *The amount proposed by the Commission may be amended by the Court in its judgment.*

2. Compliance of Member States with European Union law in 2019⁵

The European Commission publishes an *Annual Report on monitoring the application of European Union law* for the previous year, following a request made by the European Parliament since 1984.

The European Parliament shall subsequently adopt a resolution on the report. Thus, the Commission monitors whether Member States apply European Union law in the national legal order, and otherwise takes the measures provided for in the Treaties, respecting the *rule of law*.

The Commission's action on *ensuring compliance with and enforcement of European law* focuses on issues that can have a real impact on the legitimate interests of citizens and businesses. The effective application of EU law ensures that the rights and benefits conferred on citizens by Union law and the conditions of fair competition in the internal market for businesses are guaranteed.

As, according to the Treaties, the implementation of EU law is based on the *principle of cooperation*, the European Commission actively supports Member States in implementing Union law, through *guidance* and *dialogue*.

At the same time, in order for citizens and businesses to be able to capitalize on the benefits of EU law, it is necessary for Member States to transpose *European directives* into their own national legal order within the deadlines set.

In order to facilitate the correct and timely transposition of European legislation, *the Commission continued to assist Member States by preparing implementation plans, specific websites and guidance documents*, as well as *by exchanging best practices at expert group meetings*, it is also shown in the quoted document.

At the same time, the Commission continued to refer cases of infringement by Member States to the Court of Justice, requiring the imposition of daily penalties.

2.1. Monitoring the application of European Union law, 2019 Annual Report⁶

⁵ European Commission, Representation in Romania, News, *Compliance of Member States with EU law in 2019: 38 infringement procedures opened against Romania*, 31.07.2020, available at: [https://ec.europa.eu/romania/news/20200731_raport_monitorizare_aplicare_dreptul_ue_ro\(...\)](https://ec.europa.eu/romania/news/20200731_raport_monitorizare_aplicare_dreptul_ue_ro(...)). (our trans./ processing).

⁶ European Commission, *28 Member States of the European Union - Monitoring the application of European Union law, 2019 Annual Report*, Romanian version, available at: https://ec.europa.eu/info/sites/info/files/file_import/report-commission-2019-eu-28-countries-factsheet_ro.pdf. (our trans./ processing).

Monitoring the Application of EUROPEAN UNION LAW 2019 Annual Report,⁷ published by the European Commission, presents how it has ensured and monitored the application of EU law in 2019, as well as the performance of Member States in various policy areas.

According to data published by the Commission, at the end of 2019, 1,564 *Infringement Procedures* were still open, which is a slight *decrease* compared to the 1,571 procedures that were still open at the end of 2018, in total. In 2019, Luxembourg, Estonia and Lithuania registered the fewest new cases of incorrect transposition or application of EU law, while Spain, Italy and Greece registered the most cases.

According to data published by the Commission, at the end of 2019, 599 *Infringement Procedures as to timely transposition obligations* were still open, which is a *decrease* of 21% compared to the 758 procedures that were still open at the end of 2018, in total.

In 2019, Denmark, Italy and Lithuania registered the fewest new cases of late transposition of EU directives, while Bulgaria, Belgium, Greece and Cyprus recorded the highest number of cases.

We note that Romania is not one of the examples of European Union member states that have registered the *most new cases* of incorrect transposition or application and/or late transposition of EU legislation in 2019, but neither among the examples with the *fewest new cases*, being in the second part of the statistical situation, in which Member States are presented in ascending order of the number of cases recorded.

2.2. The case of Romania regarding the application of the Infringement Procedure, in 2019⁸

In 2019, 38 new Infringement Procedures were opened against Romania, the European Commission informs. The areas covered by the new Infringement Procedures were:

- financial stability, financial services and the union of capital markets (3),
- justice and consumers (3),
- migration and internal affairs (3),
- energy (3),

⁷ European Commission, *Monitoring the Application of EUROPEAN UNION LAW 2019 Annual Report*, available in English on the site: https://ec.europa.eu/info/sites/info/files/file_import/report-2019-annual-report-monitoring-application-eu-law_en.pdf. (processing).

⁸ European Commission, *Romania Monitoring the Application of EUROPEAN UNION LAW 2019 Annual Report*, EN, available at: https://ec.europa.eu/info/sites/info/files/file_import/report-commission-2019-national-factsheet-romania_en.pdf. (processing).

- mobility and transport (4),
- internal market, industry, entrepreneurship and SMEs (5),
- environment (5),
- taxation and customs union (6).
- other areas (6).

In total, on December 31, 2019, 64 Infringement Procedures were opened against Romania, *increasing* compared to 2018 (59).

At the same time, in 2019, 17 Infringement Procedures were opened against Romania regarding the non-transposition of European legislation in time. The areas covered by the new procedures for finding non-compliance with the timely transposition obligations opened in 2019 were:

- environment (3),
- mobility and transport (3),
- financial stability, financial services and the union of capital markets (2),
- internal market, industry, entrepreneurship and SMEs (2),
- justice and consumers (2),
- other areas (5).

In total, on 31 December 2019, 24 Infringement Procedures were opened for non-timely transposition of EU legislation, *decreasing* compared to 2018 (34).

We exemplify, in the excerpt, aspects from the content of the *2019 Annual Report*, aimed at the infringement of EU law by Romania and other Member States of the Union:⁹

- Regarding *Guaranteeing cybersecurity and trust in online transactions*, the Commission launched in 2019 Infringement Procedures as to the *Directive on the Security of Network and Information Systems (NIS Directive)* against 6 Member States, including Romania, for not having identified key service operators under the Directive to improve the Union's overall level of cybersecurity.
- The Commission continued the Infringement Procedure as to the *Motor Insurance Directive (Solvency II Directive)* against Romania, because it did not align the domestic legislation on motor third party liability insurance with EU rules, as Romania's national rules impose strict conditions on insurers in setting premiums, contrary to the principle of

⁹ European Commission, *Monitoring the Application of EUROPEAN UNION LAW 2019 Annual Report*, quoted doc., pp. 7-8, 15, 25. (processing).

freedom of tariffs and obliges insurers to issue a policy valid only in Romania, contrary to the directive imposing policies to cover the entire territory of the Union and a single insurance premium.

- Infringement Procedures have been launched against 4 Member States, including Romania, for signing a multilateral international agreement on the exchange of DNA, fingerprints and vehicle registration data, which contain provisions that violate the exclusive external competence of the EU under *Prüm Decisions*, which provide for mandatory automatic exchange and comparison of DNA data between national databases, to combat terrorism and cross-border crime.

3. Recent European Commission decisions on infringement by Romania - Environmental Infringement Procedures concerning illegal logging, air quality and protection of Natura 2000 networks¹⁰

The European Commission issues decisions on a monthly basis in the event of infringement, with the legal jurisdiction to sue Member States that have not fulfilled their obligations under EU law.

These decisions cover various sectors and policy areas of the European Union and aim to ensure the proper application of EU law, for the benefit of citizens and businesses.

3.1. Nature - European Commission calls on Romania to combat illegal logging and better protect forests on Natura 2000 sites on its territory (reasoned opinion)

The European Commission “urges” **Romania** to properly implement the EU Timber Regulation ((EU) Regulation No. 995/2010), which prohibits the production and placing on the EU market of products obtained from illegally harvested logs.

The Commission found that *inconsistencies* in national legislation do not allow the Romanian authorities to verify large quantities of illegally harvested timber and that national authorities authorize logging without first assessing the impact on protected habitats, as provided for in the *Habitats Directive* (Directive 92/43/EEC of the Council) and the *Strategic Environmental Assessment Directive*.

¹⁰ European Commission - Representation in Romania, News, *Romania: Environmental Infringement Procedures concerning illegal logging, air quality and protection of Natura 2000 networks*, 02.07.2020, available at: https://ec.europa.eu/romania/news/20200702_infringement_mediu_ro. (our trans./processing).

At the same time, the Commission also said, there are shortcomings in terms of public access to environmental information in forest management plans. The Commission also found that some protected forest habitats have disappeared from Natura 2000 protected sites, which is a breach of the *Habitats Directive* and the *Birds Directive*.

After analysing the arguments presented by Romania, following a *letter of formal notice*, sent in February 2020, the Commission concluded that the issues had not been resolved, in which case the Commission issued a **reasoned opinion**. In this case, if Romania does not take action within one month, the Commission may *refer* the matter to the Court of Justice of the European Union (Amariei, 2020).

3.2. Nature: European Commission calls on Romania to take necessary measures to protect and manage its Natura 2000 networks (notice of default letter)

The Commission calls on **Romania** to take measures to protect and manage its Natura 2000 networks, thus respecting its obligations under the *Habitats Directive*, according to which Member States have an obligation to propose EU Sites of Community Importance (SCI), to be included in the EU biogeographical lists, and within six years of the listing, Member States will set appropriate conservation objectives and measures, designating those SCI as Special Areas for Conservation (SAC), which are essential for the protection of biodiversity throughout the EU.

As Romania has so far not designated special areas of conservation and set detailed site-specific conservation objectives and measures, the Commission has decided to send a **letter of formal notice** to Romania, granting it a period of three months to remedy the situation. Otherwise, the Commission may decide to send a *reasoned opinion*.

3.3. Air quality: Commission calls on Romania to fully implement EU rules on permits for industrial plants (reasoned opinion)

The Commission calls on **Romania** to improve the implementation of EU rules on permits for industrial plants on its territory, as Romania allows these plants to operate without the necessary permits, in accordance with EU law, with industrial activities having a significant impact on the environment.

Directive 2010/75/EC on industrial emissions aims to prevent and reduce harmful industrial emissions across the EU, while promoting the use of energy-efficient techniques and the use of resources that reduce polluting emissions. Following the Commission's *letter of formal notice*, although some progress has been made, three plants continue to operate contrary to the

requirements of the directive and two large combustion plants do not comply with the emission limit values (for sulphur dioxide, nitrogen oxide and dust). The Commission therefore sends a *reasoned opinion*, with Romania having three months to adopt and communicate all necessary measures to ensure the full and correct application of the Directive. Otherwise, the Commission may *refer* the matter to the Court of Justice of the European Union.

Conclusions

As we have pointed out, the procedures initiated by the European Commission are based on the democratic principle of *cooperation*, under which the Commission takes preliminary steps for a *expedite solution* through a structured dialogue (*EU Pilot*) and *assists Member States in preparing implementation plans, specific websites and guidance documents*, as well as *by exchanging best practices in expert group meetings*, in order to facilitate the correct and timely transposition of European legislation.

Therefore, before addressing the European Court of Justice, the Commission operates with non-judicial procedural instruments, supporting Member States for the correct and timely application of European law, in the interests of citizens and businesses, acting on the basis of European democratic principles within the rule of law.

From the data communicated by the European Commission, selectively presented in the content of this article, it appears that Romania is not one of the examples of European Union member states that have recorded *the most new cases* of incorrect transposition or application and/or late transposition of EU legislation, in 2019 (Spain, Italy and Greece, respectively Bulgaria, Belgium, Greece and Cyprus), but neither among the examples with *the fewest new cases* recorded (Luxembourg, Estonia and Lithuania, respectively Denmark, Italy and Lithuania).¹¹

According to the quoted document, 64 procedures were opened against Romania for infringement, in total, on December 31, 2019, *increasing* compared to 2018 (59).

Regarding the Infringement Procedures for non-transposition of EU legislation in time, against Romania, in total, on December 31, 2019, 24 procedures were opened, *decreasing* compared to 2018 (34). In the current context, regarding the recent cases in which the Commission declared the

¹¹ European Commission, *28 Member States of the European Union - Monitoring the application of European Union law, 2019 Annual Report*, quoted doc. (our trans./ processing).

Infringement Procedure against Romania, (*in the field of environment regarding illegal logging, air quality and protection of Natura 2000 networks, etc.*), we note, among others, the following observation made in the documents on the agenda of the institutions of the European Union:

“Although the COVID-19 epidemic creates real difficulties for national administrations, it should not be used as an excuse to further delay the implementation of mutually agreed rules. (...)” (European Parliament, 2020).

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