

# **Digital typography in the Publications of the Department of Informatics and Statistics**

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\*\*\*nascannované zadání s. 1\*\*\*

\*\*\*nascannované zadání s. 2\*\*\*

## **ABSTRACT**

The aim of this bachelor work is evaluating of study publication quality, published by Economics and Management Faculty, Tomas Bata University in Zlín. Theoretical part is written in the name of typographic history and the now a days standard is described too. The practical part is set by analysis of perceiving this publications by students and suggesting of common conception for making as follows publications.

Keywords: Typography, Digital publishing,  $\text{T}_{\text{E}}\text{X}$ ,  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ , Mik $\text{T}_{\text{E}}\text{X}$ ,  $\text{T}_{\text{E}}\text{XnicCenter}$ , Publications covers making

## **ABSTRAKT**

Tato bakalářská práce si klade za cíl zhodnocení úrovně studijních publikací vydávaných Fakultou ekonomiky a managementu, Univerzity Tomáše Bati ve Zlíně. Teoretická část je psána ve jménu historie typografie a je popsán i současný standard. Její praktickou součástí je analýza vnímání úrovně těchto studijních pomůcek studenty a návrh koncepce pro všeobecnou tvorbu takovýchto publikací.

Klíčová slova: Typografie, Digitální publikování,  $\text{T}_{\text{E}}\text{X}$ ,  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ , Mik $\text{T}_{\text{E}}\text{X}$ ,  $\text{T}_{\text{E}}\text{XnicCenter}$ , Tvorba knižních obálek

Well, I'd like to thank Dr. Pavel Stříž for his help, stance and the great opportunity to experience praxis of DTP. I'd like to thank all my friends, colleagues and students, who has cooperated with me in the way of making this project. At last but not at least I'd like to thank Dr. Petr Klímek for the possibility of using his article.

Without these people, it wasn't able to start, make and finish my work, which could be useful for them, and the others too...

MOTTO:

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*If you don't make mistakes, you're not working on hard enough problems. And that's a big mistake.*

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*Pokud neděláš chyby, nepracuješ na dostatečně těžkých problémech. A to je velká chyba.*

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**Prof. Frank Wilczek** , 2004 Nobel Prize laureate

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## INTRODUCTION

Typography, fonts, letters, writing, pictures . . . many other words could be written at this place in way of explaining the human's desire. Desire to note information, feelings, meanings. We can have many opinions about the kinds of noting, but the fact is, that each of this kind is important and has it's specific history, presence (maybe future?) and meaning. Of course now a days we know such many ways how to note efficiently, nicely, clearly, formal or informal. The presence standard of digital work is very strong, but I think that human's objective is the same through our history: to inform effective and it isn't important, if we use pen, keyboard, or hammer and chisel.

OK, but why typography? There's other themes for university students and it seems, that I have chosen not important theme. I don't think so. Yes of course we live in electronic world, but the typography isn't term for handwritten documents only. Typography is very strange term for DTP and DTP isn't of course the old school thing. I, (as a student), meet the typography every day in student books, books and electronic materials. Although it seems very trivial, for many makers of these students items it's such a big problem. Sometimes it seems, that the purpose is more important than the form.

The subject of my bachelor work isn't rousing article of that bad books. No. I only want to determine that things, which are for us (as a students) negative, unuseful and unsightly. I hope, this will influence the standpoint of students for students books and standpoint of makers in the same way.

The other thing, that I want to say is meaning of typography beyond the borders of universities and schools. Each manager has to make documents or communicate by writing and seriously: I have met only a few of them, who are able to make nice and tabular works. Maybe most of them think, that the effective documents are hard by making and time. But it isn't right. Standard of computer skills is changing and the strict basic knowledge isn't enough.

By this work I'd like to describe that standard of making documents, which will be easy for making and efficient for using.



# I. THEORETICAL PART

## 1 TYPOGRAPHY

Typography. I've already written this mysterious word in the text, but now, according to my opinion, is the right time to define it. What's this? What does it really mean? Each of us is able to give quick (and maybe correct) answer. I looked in the English one-language dictionary<sup>1)</sup> and I realised two meanings:

- The craft of composing type and printing from it.
- Art and technique of printing with movable type.

### 1.1 History of typography

Typing. . . This word is as old as the whole mankind. At this place I'd like to describe shortly the interesting way of typography through the history. Mr. Thomas W. Phinney has very interesting categorization:

As we can see, he has meant 4 revolutions in this way[1]

1. Gutenberg (ca. 1450 – 1480) & The Impact of Printing
2. Industrial Revolution: Steam, Line-casting & Automated Punch-cutting (start 1870 – 1895; end 1950 – 1965)
3. Photocomposition (Intertype et. al., start 1950 – 1960, end 1975-85)
4. Digital (start 1973-83)

Of course I'm mostly interested in the fourth one, but let's have a look on each of this revolution.

#### 1.1.1 Johannes Gutenberg & The Impact of Printing

This man is legend and his invention of printing press is one of most appreciated inventions in European history. Why European? The mechanical printing wasn't unknown term in the global mean. The Chinese and Korean have invented it centuries ago. But the Asian civilizations were too far from the knowledge of European Renaissance and Humanism. After period of handwritten documents and books, realised by Christian monks and period of difficult attempts in the way of effective printing came strictly clear and plain idea by Gutenberg. But his way to be famous wasn't without troubles. He hasn't capital for his inventions and his business was repossessed by investors. The turn was after printing and publishing his first book: Gutenberg Bible. I think, it was great strategy (to print the holy book) to assure marketability. The fact is, that his

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<sup>1)</sup>I've used freeware software utility called 'The Sage'

42-line bible was well-valued for its high aesthetic and technical quality. Also first proof of the effective mechanical print with movable type was born.

What did it mean? Change of the printing conception and massive producing. Interesting is also fact, that the basic process remained unchanged for a long time. Mr. Thomas W. Phinney describes the method as[1]: *'A punch made of steel, with a mirror image of the letter is struck into a piece of softer metal. Molten metal is poured into this, and you get type. The type is put into a matrix to form the page of text, inked, then pressed into paper'*.

This new invention spread very fast into the whole Europe and it isn't difficult to answer the question how impressive it was. In these times wasn't problem to produce thousands of books in 'short' time for a minor price than before. Through the next decades, many other man have improved this invention, which become famous and practical in the world. It's also interesting consider with this 'plain' invention in the way of today journalism, newspapers and the news media too.

### 1.1.2 Industrial Revolution: Steam, Line-casting & Automated Punch-cutting

The second revolution: Steam revolution in 19<sup>th</sup> century. It wasn't only revolution in the way of typesetting. The opportunity and possibility use the power from steam was revolutionary in most of ways the human activities. Industrial revolution brought two important inventions in typography. In 1814 it was invention of steam press and in 1868 revolutionary rotary press. The modern technique: taking photographs and the possibility to print them restricted the option of using handmade drawings in publications. In this revolutionary part I'd like to mean a few important names:

**Ottmar Mergenthaler** – This German clock maker, has brought in typography two terms: *linotype* and then *monotype* machines, which are tied up with *line-casting*.

Line-casting allowed type be chosen, used, then recirculate back into the machine automatically. This not only introduced a huge labor savings in typesetting, (again, on the order of the 85 % reduction in printing time), but also rendered obsolete the huge masses of metal type created by the previously existing type foundries. While typesetting and printing speeds increased phenomenally, so did the speed of punchcutting.[1]

**Linn Boyd Benton** – Inventor of the pantographic punchcutting machine[2]. His machine, patented in 1885, altered the way in which letters were designed. Firstly a single set of drawings was able trace to cut matrices at a wide range sizes and it

wasn't necessary to have a skilled punchcutter. The new style was born: typing was equipollent to the pen.

*'His machine could scale a drawing to the required size, as well as compressing or expanding the characters, and varying the weight slightly to compensate for the larger or smaller size – this last being a crude form of the optical scaling done by skilled typographers making versions of the same font for different sizes. In optical scaling, the thickest strokes retain the same relative thickness at any size, but the thinnest strokes are not simply scaled up or down with the rest of the type, but made thicker at small sizes and thinner at large display sizes, so as to provide the best compromise between art and readability. The economic impact of all these advances on the type industry cannot be overstated.'*[1]

**American Type Founders (ATF)** – This society was found in 1892 by fusion of 23 type foundries and become American dominant manufacturer of metal type. Through it's history it has great competitor: linotype machine, and this competition made the profits of ATF begin to decline in 1920. ATF was re-organised (1934) but it hasn't been ever so strong as before. But ATF is tied with many names of excellent font designers, and it was ATF, which gave to world first phototypesetter, which was as popular as now a days PC.

### 1.1.3 Photocomposition

This revolution come with debuts of first photocompositions devices in 1944: French 'Photon' and 'intertype's Fotosetter'.

Typeface masters for photocomposition are on film; the characters are projected onto photo-sensitive paper. Lenses are used to adjust the size of the image, scaling the type to the desired size. In some senses this technology was an 'improvement', allowing new freedoms, such as overlapping characters. However, it also pretty much eliminated optical scaling, because in the rush to convert fonts to the new format, usually only one design was used, which was directly scaled to the desired size.[1]

### 1.1.4 Digital

This period is important, cause it's precursor of today digital typography. We talk in this way about first computer-based typesetting devices. Devices between the photocomposition machines and fully digital outputs. Cause we talk about IT devices, it was necessary to have concrete language for communication with these devices. Each device had a unique language, fonts and formats. With a need of efficient standards in typing, PostScript in 1980s set a rules. Today has PostScript many competitors, and I'll be talking about this theme in next part.

## 1.2 Now a days typography

And what's the situation now a days? In the way of continuing standards of Digital revolution, typesetting doesn't seems as a big problem. Most of people of the civilized world is able to work with PC, and this devices brings much more than only working tool. It's way of entertainment, education, maybe lifestyle. Cause the computers theme is mass thing, of course the now a days standard for typography and publishing has to be clear, plain and effective. We are able to have refined outputs, which don't have to be printed to the papers. As i have already written, the PostScript standard has many competitors. I think that the head reason is of operation systems, and also many of graphical software count. The slogan of today is: 'Let's make thinks transparent, clear and easy' and to fulfill this slogan, graphical software has to be able solve many tasks instead of user. And that's the problem, according my opinion. Why? The answer is so simple: because it isn't exact and sometimes these software tools aren't able to respect typographical standards... Of course, there are professional typographic systems, which are independent to the operating system, but they aren't much popular cause of alleged difficult control. In this work I'd like to go on in the thesis of some my colleagues, who doesn't think so. I'd like to show, that the professional system could be efficient for common users too.

## 2 DESKTOP PUBLISHING (DTP)

Firstly let's have a look on the definition. I've found the definition as: Desktop publishing is the computer science using of microcomputers with graphics capacity to produce printed materials.<sup>2)</sup> In practical way it's set of tools and methods, which the computer user uses to publish his ideas. And I don't mean only text. It could be any multimedial work too (e.g. pictures, sound, movie and so on). With PC we have much solutions how to view and save the output and important question is form of this output.

### 2.1 In the name of DTP

DTP term began in 1985, with Aldus company software called PageMaker. In the same year Apple Computer company introduced competitor for PageMaker called LaserWriter. With these software tools came term WYSIWYG (what you see is what you get). WYSIWYG term became standard very soon, cause it's effective way how to get easy great results of graphical working (typesetting of course too). The basis of this tools is efficient computing core, which is able through mathematical algorithms do proper actions, according the user's commands. This commands are realised via GUI (graphic user interface). The user has great advantage, cause in this systems, is able to see immediately the results of his commands. The output is possible to see on the monitor screen. The method, I've shortly described has one big disadvantage: in the way of simplification, has the computer (via concrete software) do many commands and steps on the background. So the user isn't able to influence it, and the output isn't exact as on the screen. Sometimes it isn't problem because the differences are imperceptible, but in any ways are the differences big problem and it isn't easy to solve it simple. If we want really exact output, we have to use the software tool on the for example programming basis.

But DTP isn't only term for software development. The research and requirements on better performance brought need of powerful hardware. I think that just that need of better visual and computing results was the head reason of fast hardware development. At the rise of DTP were these companies[3]: Adobe with PostScript standard, Apple Computer company with it's hardware, Aldus with DTP software and companies Canon and Hewlet Packard with printers. The DTP situation were quite stable and the first wave of changes were after entrance Microsoft to the market. Especially with the MS Windows 95 product (as a first Microsoft's really effective GUI operating system). The situation has changed because the software developers wanted to make graphical software not only for Apple, but for Microsoft too. And new competitors were born:

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<sup>2)</sup>The Sage software dictionary

Apple vs. Microsoft. I don't want to say which of these systems are better or more effective. According my opinion the users decided for one of them on the basis of preferences, not requirements, cause each of these systems offered very similar ways how to get results.

In next years has come other changes and we can see the evolution of DTP. At the rise of DTP there was only Aldus with professional publishing software tool (PageMaker). But it wasn't for a long time, increasing demand on this software, was ideal for entrance Quark company with their own competitive software QuarkXpress. QuarkXpress was revolutionary software because of their plugin system invention called Xtensions. Situation of Aldus's getting weak exploited Adobe company. Adobe has bought the Aldus company and on the basis of PageMaker has developed it's own software called InDesign. InDesign shortly overtook the leadership in DTP software products. Adobe started getting stronger and stronger. This fact influenced Adobe's software portfolio. The legendary Adobe Photoshop came soon and immediately started as great photo editing tool, supporting that time modern devices: scanners and cameras.

The other Adobe's important software is PostScript. The first device designed to use PostScript standard was Apple Laserwriter (the first desktop laser printer). This standard started to be supported by high-end devices and it's mass professional usage could begin. It was implemented in the other important ways like: vector drawing and font technology.

Very important term is Adobe PDF (portable document format). This format begun quite quickly standard and Acrobat Reader software (or it's equivalent at non windows systems) tool is basic equipment of each PC.

*'Desktop publishing has often been criticized by graphic designers as being responsible for lowering design standards. The reasons for this are often related to the ease with which DTP has made it for amateur 'designers' to produce published documents. Indeed, the term 'desktop' has been criticized as somewhat misleading.'*[3]

My opinion of the citation above is, that this fact was brought by endeavor of SW developers to offer professional tools to the common users, who doesn't have the practice and enough theoretical knowledge. But I don't think it's bad. I mean the graphic designers aren't allowed to say what's right or not. I think DTP as a way of freedom, freedom to realise ideas of each user who wants publish. Standards and rules? Of course, but only in the way of formal works and DTP isn't strictly tied up with

formalities.

And what about future? DTP is getting powerful more and more. Digital publishing is more than standard, more than term. In the conjunction with network and internet presentations it's meaning increases. Adobe projects as Flash and Dreamweaver are well known and popular. DTP meddles to the mobile devices such as PDA (personal digital assistant) and smartphones (mobile phones devices with own operation system). Quality of outputs are better and better and each SW or HW progress brings new possibilities. I hope the research will implement more efficient WYSIWYG algorithms to DTP systems and maybe sometimes it won't be necessary to know different commands to programme internet sites, typographic outputs or graphics, and everything will be united in one, tabular and clear editor tool...

## 2.2 Well known DTP SW tools

At this place I'd like to define the most known SW tools, which are used in the name of DTP.

### 2.2.1 MS Office suite



Fig. 1. MS Office 2007 product logo

It isn't important if we don't like MS Office. MS Office is legendary suite. Great marketing campaign has made lot of loyal followers and working skill of MS Office is today's standard. Office suite has quite long history and in the following tabulars I'd like to show all the product versions in Appendix P I. MS Office is multiplatform SW. Of course it was developed primarily for MS Windows platform, but as you can see in Appendix P I, the Macintosh version is disposal for use. Although the name, this suite isn't determined only for 'office'. This SW pack is criticised in the way of SW security (as the whole Windows system). What's interesting way of use for me? DTP of course. From whole the SW package I've chosen these ones, which are according my opinion usable for DTP:

**MS Word** – Maybe most popular software tool from MS Office suite. Text editor with many helpful tools based on WYSIWYG standard. Advantages are imple-



mentation of Visual Basic language (object type programming language), possibilities of layouts, formatting and templates. Great advantage (as in all of the Office products) is technical support and localizations. In the newest version is integrated the XML code for output (this change has made the incompatibility with the older versions). Other advantage is tabular and clear using via control panel buttons and shortcuts. And it's true, that in Word is possible make very nice outputs. Disadvantage of this product (as of whole Office pack) is fact, that it's commercial. And finally: the output isn't really exact as on the screen. Although many plugins the mathematical typesetting is quite big problem and making refined graphical works is impossible task.

**MS PowerPoint** – Primarily used for presentations, one of the most popular SW tool. PowerPoint is anything between pure text editor and simple graphical environment. This application gives opportunity to make effective presentations (output could be printed, or viewed on screen etc.) full of multimedia files. Of course this tool isn't designed to create difficult graphics. But in the case, you have prepared sounds, graphics or movies, you'll be possible to prepare effective works. In the way of typesetting I have to say, that PowerPoint isn't prepared very well and possibilities in compare of MS Word (or professional DTP system) is quite poor.

**MS Publisher** – This product is the tool for making business cards, newsletters and so on with some functions of popular product MS FrontPage. FrontPage's development was stopped in 2003 and it's purpose was to be SW environment for WYSIWYG making HTML (hyper text markup language) internet sites. Basis of Publisher is very similar to PowerPoint. The head difference I see in the possible outputs and graphical possibilities. According my opinion is Publisher the most powerful DTP system from the whole Office pack. But we aren't still on the level of professional type way.

### 2.2.2 OpenOffice.org suite



Fig. 2. OpenOffice.org product logo

OpenOffice... Already from name of this product is possible to guess head advantage: the Open-Source license. The Sage dictionary says following: Open-source is adjective of or relating to or being computer software for which the source code is freely available. OK, it's for free, and when I'm good programmer I'm able to modify it, but what's this? OpenOffice.org is office oriented software pack, similar to Microsoft Office suite. Globally isn't competitor in all the possibilities of Microsoft suite (OO.org has equipollent applications only for MS Word, MS Excel, MS PowerPoint and MS Access) and it's equipped with applications for mathematical typing and drawing. OpenOffice.org is multiplatform suite, primarily developed for Linux systems, then for Windows environments too. Disadvantage of OO.org is according my opinion absence of Visual Basic language support and sometimes incorrect association of MS Office documents (but we can see the difference: MS Office hasn't support for other office suite outputs). I see advantage of this software pack in license, possibilities and direct support for PDF and L<sup>A</sup>T<sub>E</sub>X source code outputs. In the way of DTP I'd like to deal with these applications:

**Writer** – Application developed as competitor to MS Word. GUI is very similar to it and function too. You're able to use many layouts and formatting options. As a text processing applications, serves well, but it wasn't developed for exact typesetting too.

**Impress** – Competitor for MS PowerPoint. Similar GUI, similar options, similar function. There are only a few differences. Good tool for making presentations, but not really strong DTP tool.

**Math** – This program brings possibility of typesetting of mathematical formulas. It isn't anything new, what MS Office doesn't have. MS Office pack solves this problematics via integrated plugin, not as a external program. The output is quite good, but in really difficult mathematical parts of text, has many imperfections.

### 2.2.3 Software602 suite



Fig. 3. Software602 product logo

I'm sure that office suite with magical number '602' is minimally in one way legendary. In the way of it's history. Software602 (as the name of development company) has continued on the basis of T602 software. Well known Czech text editor for MS Dos operating system. It was first text editor, which was able to typeset texts with typical Czech type details and standards. Advantage of T602 was control environment in Czech language, possibility of using key shortcuts and possibility to use keyboard layouts like in WordStar editor.

After 'Velvet revolution' in 1989 started with development new software firm: Software602. Czech IT environment was demanding software so much and the developers of this firm had great idea: develop their own office pack (not only text editor). And new office suite competitor was born. Success of this product made to this company many opportunities but through the time it was clear, that MS Office is too strong... So the management of '602' was made to lower price of this product, and finally this pack was offered for free. In 2000 was development of this office suite stopped, and new product was released: 602Office. What was new? At first the license: office pack of Software602 started to be commercial, developed on the platform of OpenOffice.org. This fact is advantage and disadvantage too. Because there aren't a lot of differences and you have to pay for it. The compatibility with MS Office documents is better. Whole the pack is oriented to support XML standard. You are able to download many plugins. But we're still talking about advantages of OpenOffice.org. Question, if the differences are equipollent to the price is problematic, that I let to the customers. According my opinion customers, who are on Windows platform and want to pay, buy the MS Office suite. It's well known, popular, and most of users are able to work with it.

The OO.org I've defined above but Software602 has another application: 602XML Designer Express. It's product developed for creation 'intelligent' forms.[4] It offers possibility of making many financial forms and user defined forms and next publishing of it. But I don't really mean it as a good typesetting tool.

### 2.2.4 QuarkXpress



Fig. 4. QuarkXpress 7 product logo

First application of my list, developed really for pure DTP. It's way through history I've started in one of previous chapters. It's one of most used DTP system on professional level. Great technical and educational support makes this system really efficient. As a multiplatform software (Mac OS and Windows environments) has made many followers in whole the world. Since 2006, in the name of marketing politics, the QuarkXPress 5 (older version, the newest one has number 7) has been offered for free, The developers hope, that the qualities of old version will bring more new users for the newer ones.

How it works? *QuarkXPress* allows the user to define areas of a document (called 'boxes') which are to be filled with either text or graphics. Although they are called boxes, they can be created in a wide variety of shapes. The boxes can be reshaped, layered, and given varying levels of transparency and runaround. The content placed in the text version of the boxes is provided with an array of typographic controls as required by professional typesetting businesses. In addition to the basic functionality of font, alignment, spacing, and color, the package also provides its users with professional level typesetting options like kerning, curving text along a line, and ligatures.[5]

QuarkXPress is WYSIWYG editor with many features. User is working with two head terms: *content* and *object*. The first one is characterized with working with textboxes and color options, including possibilities of shaping and vector graphics. The second term describes the work of manipulating with product of previous term. There are many possibilities in output formats including cooperation with Adobe Photoshop format (PSD), PDF or HTML and XML. QuarkXPress is available in the server version too and one of it's feature is editing the web pages directly in the web browser.

### 2.2.5 InDesign



Fig. 5. InDesign product logo

InDesign. The Adobe's answer to QuarkXPress. Many designers are in the 'war' in the name of: InDesign vs. QuarkXPress. But firstly I'd like to write a few words about InDesign.

InDesign is multiplatform WYSIWYG DTP editor very similar to QuarkXPress. It's continuing in the fame of legendary PageMaker from Adobe. With extended and advanced possibilities of graphics and typesetting it's strong product on the area of professional DTP software product. InDesign has many similar at QuarkXPress is presence of InDesign server product. But the InDesign server product hasn't got the web pages editor, and serves only in the relation of server-client.

As I've written between group of InDesign followers and QuarkXPress group stands rivalry. Why? hard to say. Both of this products are great, have great support and possibilities. So the problem's in the preferences. It's the same as the rivalries in the way of operating systems, or graphic cards producers. Very interesting place for the InDesign and QuarkXPress followers is web site: <http://quarkvsindesign.com/>. It isn't web full of flammable discussions, but place where you can find information and it isn't important which DTP system you prefer.

InDesign together with other Adobe applications make Adobe DTP products portfolio independent. Independent on applications the other sides (excluding OS and HW drivers of course). According my opinion Adobe is one of that developing companies, which offers complexly oriented products and advantage of Adobe software is, that the outputs of it's applications are reciprocally compatible.

### 2.2.6 Adobe Photoshop



Fig. 6. Photoshop product logo

Other very popular software tool. Well used by web designers and photographers too. Photoshop is developed for editing, processing and modifying the bitmap images. User is able to work with many effects and options to get professional results. According Adobe's standard is Photoshop WYSIWYG editor. Photoshop wasn't developed only for bitmap processing. Of course in the name of editing and modifying images, you're available to work with text. Typesetting is of high Adobe's standard. Settings and options of this product are on so high level, that Photoshop is getting popular more and more.

Photoshop history is tied up with Thomas knoll. Ph.D. student of Michigan University, who has developed in 1987 his own application working on the grayscale basis in the Mac OS for the monochromatic display of his computer. Then with cooperation with his brother and people from Industrial Light & Magic company he has developed the application working with color palette. This application called ImagePro was basis for future release of Photoshop. After demonstration Photoshop to the Apple developers (and head of Adobe company) started the Photoshop being developed exclusively for Macintosh.

As a bitmap editor, has Photoshop support of many output (and also input) formats coded in all the color coding standards (like CMYK, RGB, grayscale and so on). Photoshop is able to read the vector graphics inputs too. Many users mean Photoshop as a most powerful tool for bitmap graphics on the market ever.

### 2.2.7 Corel Draw Graphics suite



Fig. 7. CorelDraw X3 product logo

Primarily developed for the vector graphics, grew up into powerful tool. Corel is offered in the suite of applications which globally serves in the DTP name well.

At first a few words about Corel company. Name of this known Canadian company is abbreviation of 'Cowpland Research Laboratory'. Corel got its fame with developing Corel Draw graphics suite. Releasing this software made many of investors wealthy and Corel started the position of mighty Canadian software producer.[6] But the mighty men of Corel wanted more. With the opportunity of making competitor for MS Office, released Corel WordPerfect suite. WordPerfect: 'The Pepsi for Microsoft's Coke...'[6]. Good idea, good quality, good prognosis. But that was all. Releasing of WordPerfect wasn't so successful. Corel was forced to lay-off large numbers of employees and Cowpland came under investigation by the Ontario Securities Commission for insider trading.

Extending influence of Adobe's company and its growing portfolio confirmed need of quality graphical and DTP systems. Development of Corel Draw was necessary to get back fame and influence. Next years full of management and strategy changes was for Corel quite unfortunately. But not everything in those times gone bad. Corel developers had many great software inventions, but of bad marketing and great competitors, wasn't possible to win that race. Break point was in 2000. Corel went to the 'strategical alliance' with Microsoft, which invested \$ 135,000,000 into Corel company and things got returned.

Next years became situation more stable. In 2003 bought US Justice Department 50,000

copies of WordPerfect[6] office suite and great marketing act was bundling this office pack with new Dell computers. Corel company is also tied up with names as InterVideo and WinZip software tools and I think that strong Corel is back offering powerful software tools not only for DTP.

With view to DTP I'd like to define two already named suites: *WordPerfect* and *Corel Draw*.

WordPerfect office suite continued on the basis of same named software, which license was bought from Novell company, and as a Corel's was released in 1996. The most important parts of the suite are:

**WordPerfect X3** – Text editor with such a long history. Multiplatform software developed for Microsoft, Unix and Macintosh operating systems too. It's variable and flexible system built on it's own styles and scripts. It has direct support for HTML, XHTML and CSS codes too. Advantage of own macro language programming, wide possibilities of libraries, style sheets and formatting. System is (according Corel standard) use interesting graphical tools, which makes WordPerfect interesting tool for common DTP works.

**Corel Presentations X3** – Competitor for MS PowerPoint and OO.org Impress. According my opinion from these 3 software tool, it's the most powerful one. It has better and extended animation and graphical function, better output options, direct PDF and MS PowerPoint support and web publishing options.

And now anything about famous DTP applications of Corel Draw suite. Of course, Corel Draw suite isn't the only one on the market. Primarily it's used for vector graphics and in this way has many famous and professional competitors (e.g. Adobe Illustrator, Xara Xtreme and many others). So why Corel Draw? Because of author of this bachelor work. With Corel Draw I've best experience and some works in practical part of this thesis was realised just in this environment. There are many DTP tools and user (customer) is able to choose what's necessary for his work or need. Vector graphics? Bitmaps? Pure typesetting? Each of this term is part of mighty desktop publishing and I don't want to be the judge who says what's good and what's bad...

**Corel Draw X4** – Known vector graphics editor with great support of input and output formats. Many really useful tools and control panels make this environment popular especially for laymen, and beginning graphic makers. CorelDraw is WYSIWYG editor developed for MS Windows and Macintosh operating systems. It has wide support of fonts, templates and typesetting options. Standard is of



course working with all known color coding types and printer drivers support. Advantage is direct interconnection with other applications from this suite. Very interesting possibility for real artists, who want to go by ‘digital way’, offers application Corel Painter (isn’t included in Corel Draw suite), which simulates the art techniques and methods with many sophisticated tools.

**Corel PhotoPaint X4** – Other application of Corel Draw suite. Oriented as a competitor for Adobe’s Photoshop. Also application used for bitmap graphics editing, with strong tools and multiformat support for input and output. As the photoshop software, has the PhotoPaint support for required photo hardware devices.

### 2.3 T<sub>E</sub>X and L<sup>A</sup>T<sub>E</sub>X system

At this place I’d like to get to the core of my thesis. Get to real meaning, go to underground of well known WYSIWYG editors. Escape to noncommercial sphere, where every DTP (especially typesetting) dream isn’t problem. To the sphere, where possibilities are limited only by users. I’d like to introduce systems, which could me useful and cheap.

#### 2.3.1 Donald Knuth’s T<sub>E</sub>X system

T<sub>E</sub>X what’s it? What does it mean? OK, so let’s have a short definition... T<sub>E</sub>X is a programming language of structural type. In the way of setting commands user (typesetter) gives the exact information to the hardware about destination and rules of typesetting.

Donald Knuth, the author of T<sub>E</sub>X system and many publications about it, wrote in introduction of his ‘bible’ of T<sub>E</sub>X: *‘This is a handbook about T<sub>E</sub>X, a new typesetting system intended for the creation of beautiful books – and especially for books that contain a lot of mathematics. By preparing a manuscript in T<sub>E</sub>X format, you will be telling a computer exactly how the manuscript is to be transformed into pages whose typographic quality is comparable to that of the world’s finest printers; yet you won’t need to do much more work than would be involved if you were simply typing the manuscript on an ordinary typewriter.’*[8]

In these a few sentences is hidden whole the mystery of T<sub>E</sub>X. And why was T<sub>E</sub>X created? Cause there wasn’t really exact software. So exact to respect all the difficult standards of typesetting. Standards of each language, standards of each font, standard of maths. Maths, that’s the right term. Knuth created T<sub>E</sub>X because of absence of effective possibility of mathematical typesetting. And it wasn’t (isn’t) problem only

on the academical field. Many of us need (want) to publish texts with mathematical formulas, symbols and so on. According my opinion none of the WYSIWYG editors I meant in my list above, is available of exact typesetting in this way. Interesting? Mysterious? Problematic...

First release of Knuth's digital typesetting environment wasn't so powerful and great. But since first release it had all the preconditions to became being powerful.  $\text{\TeX}$  is developing under conditions of open source license. This license I've already defined. Shortly is important that everybody is able to change the source code. Basis of  $\text{\TeX}$  is very efficient core, that control the typesetting processes including hyphenation. The important processes communicating with core could be modified. In this way is user able to install extending packages, which modify the base processes or brings the new ones. This packages are developed over the whole world and bring to the community of users new possibilities. Possibilities of needed standards of behavior for each object which will be typeset.

First released  $\text{\TeX}$  was designed for internal needs of Stanford University and originally coded in SAIL programming language. Through the time was the source platform changed for the WEB language. Next version of  $\text{\TeX}$  was released in 1982 as  $\text{\TeX}82$ . In this version the hyphenation algorithm was replaced, and platform was changed too to better support of various hardware components. With this version is tied two names: Frank Liang and Guy Steele.

In 1989 came  $\text{\TeX}$  back under Donald Knuth. Knuth has changed the core of system.  $\text{\TeX}$  started to work in 8-bit mode (so the core was able to make 256 various symbols in compare to previous 128 ones), because of improving the typesetting possibilities for foreign languages. This new version was called  $\text{\TeX}$  3.0 and brought up new version of METAFONT<sup>3)</sup> application.

*Since version 3.0,  $\text{\TeX}$  has used an idiosyncratic version numbering system, where updates have been indicated by adding an extra digit at the end of the decimal, so that the version number asymptotically approaches  $\pi$ . This is a reflection of the fact that  $\text{\TeX}$  is now very stable, and only minor updates are anticipated. The current version of  $\text{\TeX}$  is 3.1415926; it was last updated in March 2008. The design has been frozen after version 3.0, and no new feature or fundamental change will be added after that, so that all newer versions shall contain only bug fixes. Even though Donald Knuth himself has suggested a few areas in which  $\text{\TeX}$  could have been improved, he indicated that he*

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<sup>3)</sup>METAFONT is specific programme language for creating user's own fonts. It's based on the designing the vector form, which is in the next step set to the bitmap. The output is saved as a .TFM file.

*firmly believes that having an unchanged system that will produce the same output now and in the future is more important than introducing new features. For this reason, he has stated that the ‘absolutely final change (to be made after my death)’ will be to change the version number to  $\pi$ , at which point all remaining bugs will become features. Likewise, versions of METAFONT after 2.0 asymptotically approach  $e$ , and a similar change will be applied after Knuth’s death.*[10]

How does T<sub>E</sub>X works? As I’ve already written, the communication with core is done via commands, *which commonly start with a backslash and are grouped with curly braces. T<sub>E</sub>X is a macro- and token-based language: many commands, including most user-defined ones, are expanded on the fly until only unexpandable tokens remain which get executed. Expansion itself is practically side-effect free. Tail recursion of macros takes no memory, and if-then-else constructs are available. This makes T<sub>E</sub>X a Turing-complete language even at expansion level.*[10]

Whole this typesetting system is divided into four levels:

**First level** – On this level are characters read from the input file and assigned as a category code (catcode). Combinations of a backslash followed by letters or a single other character are replaced by a control sequence token. In this sense this stage is like lexical analysis, although it does not form numbers from digits.

**Second and Third level** – Expandable control sequences (such as conditionals or defined macros) are replaced by their replacement text. The input for the third stage is then a stream of characters (including ones with special meaning) and unexpandable control sequences (typically assignments and visual commands). Here characters get assembled into a paragraph. T<sub>E</sub>X’s paragraph breaking algorithm works by optimizing breakpoints over the whole paragraph.

**Fourth level** – The fourth stage breaks the vertical list of lines and other material into pages.[10]

T<sub>E</sub>X system has precise knowledge of the sizes of all characters and symbols, and using this information, it computes the optimal arrangement of letters per line and lines per page. Then produces a DVI file (DeVice Independent) containing the final locations of all characters. This dvi file can be printed directly given an appropriate printer driver, or it can be converted to other formats. The other formats could be for example Adobe’s well known standards PS (PostScript) and PDF.[10][8]

The base TeX system (T<sub>E</sub>X’s core) is able to understand about basic 300 commands, called primitives.[8] However, these low-level commands are rarely used directly by

users, and most functionality is provided by format files (predumped memory images of  $\text{T}_{\text{E}}\text{X}$  after large macro collections have been loaded). Knuth's original default format, which adds about 600 commands, is called Plain  $\text{T}_{\text{E}}\text{X}$ . Another widely used format,  $\text{AMS-T}_{\text{E}}\text{X}$ , is produced by the AMS (American Mathematical Society), and provides many more user-friendly commands, which can be altered by journals to fit with their house style. Most of the features of  $\text{AMS-T}_{\text{E}}\text{X}$  can be used in  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$  by using the AMS packages. The  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$  I'll define in the next chapter.

Last term I'd like to define in the way of  $\text{T}_{\text{E}}\text{X}$  is the hyphenation. In comparison with manual typesetting, the problem of justification is easy to solve with a digital system such as  $\text{T}_{\text{E}}\text{X}$ . This system provides necessary points for line breaking. So it's possible to automatically spread the spaces between words to fill them in the line. The problem is thus to find the set of breakpoints that will give the most pleasing result. Many line breaking algorithms use a first-fit approach, where the breakpoints for each line are determined one after the other, and no breakpoint is changed after it has been chosen.[10] Such a system is not able to define a breakpoint depending on the effect that it will have on the following lines. In comparison, the total-fit line breaking algorithm used by  $\text{TeX}$  and developed by Donald Knuth and Michael Plass considers all the possible breakpoints in a paragraph, and finds the combination of line breaks that will produce the most globally pleasing arrangement.[10]

Formally, the algorithm defines a value called badness associated with each possible line break; the badness is increased if the spaces on the line must stretch or shrink too much to make the line the correct width. Penalties are added if a breakpoint is particularly undesirable. The algorithm will then find the breakpoints that will minimize the sum of squares of the badness (including penalties) of the resulting lines.  $\text{T}_{\text{E}}\text{X}$ 's line breaking algorithm has been adopted by several other programs, such as early versions of Adobe InDesign desktop publishing application, and the GNU `fmt` Unix command line utility.[10] There are many terms and mysterious words tied up with  $\text{T}_{\text{E}}\text{X}$ , but the basis of function is, also I hope, defined. . .

$\text{T}_{\text{E}}\text{X}$  system is developed under the conditions of public domain license. The one of great advantage (except professional and exact typesetting possibilities) is support of  $\text{T}_{\text{E}}\text{X}$  users community, which continually improves, refines and in the way of additional packages enriches the basic system. With support of these unobtrusive 'makers, developers and fans' is  $\text{T}_{\text{E}}\text{X}$ , despite the 'quite old' conception, getting legendary and more efficient.

### 2.3.2 Leslie Lamport's L<sup>A</sup>T<sub>E</sub>X system

Now I'd like to explain L<sup>A</sup>T<sub>E</sub>X. It seems so similar, and so different to T<sub>E</sub>X. Is there any difference? Shortly: L<sup>A</sup>T<sub>E</sub>X is set of macros using the T<sub>E</sub>X as a core for typesetting. L<sup>A</sup>T<sub>E</sub>X is offering more comfortable controlling and use of this system supporting many editors and extended options.

L<sup>A</sup>T<sub>E</sub>X was made by computer specialist Leslie Lamport. It was made as a answer to PlainT<sub>E</sub>X format. PlainT<sub>E</sub>X format had one big disadvantage: it was still strictly programming oriented. L<sup>A</sup>T<sub>E</sub>X came as a environment not only for professionals. The basis of working in L<sup>A</sup>T<sub>E</sub>X is using the specific macros. Macro is set of 'upper level' commands, which do many support works automatically for user. Result of this conception? Simplification... With L<sup>A</sup>T<sub>E</sub>X could everyone in a few days start typesetting the professional outputs.

L<sup>A</sup>T<sub>E</sub>X history starts in 1985. It's conception was very popular not only in academical way and many professional DTP specialists started to use it. This situation made Leslie Lamport to improve the system to the L<sup>A</sup>T<sub>E</sub>X 2.09 version. In 90's with coming standard of laser jet printers, was necessary to do another improvement. The differences in core system of L<sup>A</sup>T<sub>E</sub>X made to rise new version: L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>. Mr. Lamport with cooperation of Mr. Goosens and Mittlebach are working on next L<sup>A</sup>T<sub>E</sub>X version: L<sup>A</sup>T<sub>E</sub>X 3.0.

L<sup>A</sup>T<sub>E</sub>X system advantage is in automatical conception. System has many predefined classes, which improves the typeset output. Of course has user free opportunity of working, but if he wants, his work could be really simplified. L<sup>A</sup>T<sub>E</sub>X is tied up with using of additional packages, which gives to this system the great support of any DTP idea to be realised.[12]

L<sup>A</sup>T<sub>E</sub>X system working conception you'll be able to see in the practical part of this bachelor work, where I'll show the real applications on real publications.

L<sup>A</sup>T<sub>E</sub>X isn't only one 'upper' follower of T<sub>E</sub>X. The conceptions of T<sub>E</sub>X background is changing too. Today's standard is using the UTF-8 coding and stronger support of OpenType fonts. The new followers of basic system are for example XeT<sub>E</sub>X (new environment using the Unicode standard, originally developed for Mac OS X) and LuaT<sub>E</sub>X (next generation built on basis of pdfT<sub>E</sub>X with direct support of Lua scripting engine).

## **II. PRACTICAL PART**

Firstly I'd like to write a few lines about purpose and objective. What do I want to analyse? What do I want to suggest as a solution? Whole this bachelor work, most parts in the way of DTP of this practical part was done in  $\text{\LaTeX}$  system. As an objective I mean: showing this environment as an efficient solution for custom users.  $\text{\LaTeX}$  isn't only for professionals, or people who are able to programme well. I'd like to show how is possible make plain and nice documents, which will be stable and easy to publish. Then I'd like to show little more difficult works, that I've already done.

The one of my objectives in this work is the questionnaire research among students. What do I want to know? The answer is very easy. The opinions of study publications. These items are primarily meant to them. Are they really pleased by quality of those publications? We will see after statistical evaluation of research.

I'll be writing about basic work conception of  $\text{\LaTeX}$  system in first part of bachelor work practice and about software tools, that I've used in this way. The primarily object of this part is, show how to make first and plain page without difficulties, but according the international standards.<sup>4)</sup>

In the next part I'd like to show results of working in this DTP system, all with the source codes as a appendices included of course. At least I'd like to summarize whole the work in conclusion part.

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<sup>4)</sup>The basic working conception will be applied according to the  $\text{\LaTeX}$  well known document typeset in Czech language called '*Jak nejrychleji napsat svůj první dokument v  $\text{\LaTeX}$ u*', which was made as a study publication for students of Brno university of technology. The document was made by Mr. Petr Sadvorský and the team of his colleagues.

### 3 QUESTIONNAIRE RESEARCH

The first step of the practical part, was doing the survey. The survey was realised on three faculties of universities in Czech Republic. It was these ones:

- **Tomas Bata University in Zlín** – Faculty of Management and Economics
- **University of Hradec Králové** – Faculty of Informatics and Management
- **Technical University of Ostrava** – Faculty of Safety Engineering

Objective of this survey was to define opinions of study publications of us, students. In this survey I've had 111<sup>5)</sup> respondents.

The survey was concipated as a questionnaire research. The research was oriented on the answers to the questions in the way of student's point of view to these terms: graphics, formats, styles, colors, paper vs. digital form and of course payment for publications.

The survey had 16 questions. It was realised as a MS Word template, which was filled up by digital way, and offered via e-mail communication.

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The questions in survey were (including the answer possibilities):

1. **What university do you study at?**

- *Answer...*

2. **What faculty do you study at?**

- *Answer...*

3. **Do you use the publications published by your faculty?**

- Yes, I use them.
- No, I don't use them.

4. **Do you mean the scripts as an adequate study support item?**

- Yes, I mean.
- No, I don't mean.

---

<sup>5)</sup> 75 respondents were from FaME TBU, 22 respondents were from FIM UHK and 14 respondents from FSE TUO



- 
5. **Is the graphical emendation important for you? Like: Do you mean the attributes like: fonts and their formatting (e.g. *italic*, **bold** and so on) as a factor influencing the using comfort?**
- Yes.
  - Rather yes.
  - I´m not sure.
  - Rather no.
  - No.
6. **Do you think the processing quality of study publications sufficient?**
- Yes.
  - Rather yes.
  - I´m not sure.
  - Rather no.
  - No.
7. **If not, what´s according your opinion the head imperfection?**
- *Answer...* [optional]
8. **What do you think about the price of publications?**
- It´s adequate to the quality.
  - It isn´t adequate to the quality.
9. **Would you be willing to pay more, in the case of making the study publications according your recommendations?**
- Yes.
  - Rather yes.
  - I´m not sure.
  - Rather no.
  - No.
10. **Would you appreciate the idea, that all the publications would be made according the unified standard?**
- Yes.
  - Rather yes.

- I'm not sure.
- Rather no.
- No.

11. **Would you appreciate the coloured print in publications?**

- Yes.
- I'm not sure.
- No.

12. **Would you appreciate the presence of illustrations in publications?**

- Yes.
- Rather yes.
- I'm not sure.
- Rather no.
- No.

13. **Do you mean the printed publications as a hangover in now a days?**

- Yes, I mean it.
- No, I don't mean it.

14. **Would you prefer rather the digital form?**

- Yes.
- Rather yes.
- I'm not sure.
- Rather no.
- No.

15. **Would you be willing to pay for the digital form of publications?**

- Yes, I would pay.
- No, I wouldn't pay.

16. **Would you be willing to participate on making of publications?**

- Yes.
  - I'm not sure.
  - No.
-

### 3.1 Research results

At this place I'd like to show results and of course add the comments for them.

As I've already written, I had 111 respondents from above meant universities. The respondents characteristics<sup>6)</sup> is in the Tab. 1:

Tab. 1. Respondents characteristics

Faculty (University)	Count of answers	% share of total answers
FaME (TBU in Zlín)	75	67,6 %
FIM (UHK)	22	19,8 %
FSE (TU of Ostrava)	14	12,6 %
$\Sigma$	111	100 %

This research was made in the name of FaME, TBU in Zlín, primarily. That's the reason of the head share of respondents by this university (67,6 % of total respondents). The other research results from another universities was done for comparison and to assure, that the DTP in study publications is global problem.

Very interesting were the answers for the third and fourth survey questions. The results are in Tab. 2 and Tab. 3:

Tab. 2. Question 3 answer results

Q: Do you use the publications published by your faculty?		
Answer	% of global share	% of FaME TBU share
Yes, I use them.	97,3 %	100 %
No, I don't use them.	2,7 %	0 %
$\Sigma$	100 %	—

As we can see according the results most of respondents use the publications published by current faculties. So the purpose of this publishing is reasonable and right. Globally 97,3 % of respondents use them. All the respondents from FaME TBU in Zlín has answered in the positive way, so they use the publications. Of course not each student has answered in this survey, but I mean this result very good.

<sup>6)</sup>according the survey questions No. 1 and No. 2

Tab. 3. Question 4 answer results

Q: Do you mean the scripts as an adequate study support item?		
Answer	% of global share	% of FaME TBU share
Yes, I mean.	89,2 %	84 %
No, I don't mean.	10,8 %	16 %
$\Sigma$	100 %	—

According Tab. 3, most of respondents mean the scripts as an adequate support for their studies. Globally 89,2 % of respondents is of this opinion. The situation by FaME TBU in Zlín respondents is very similar: 84 % of FaME respondents mean the scripts as an adequate study support item. 16 % is of opposite opinion.

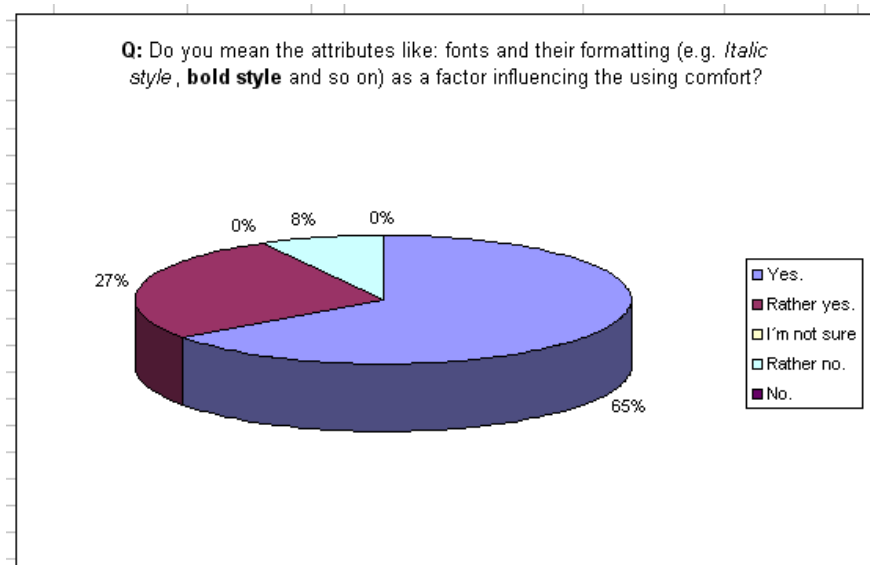


Fig. 8. Question 5 answer results

On the Fig. 8 we're able to see the reactions of the fifth question. For 65 % of respondents is the graphical emendation really important and for 27 % it's important term. For last 8 % of respondents isn't the emendation so important. According the results it's evident the need of high quality graphical emendation. The results on FaME were very similar to the global trend. 56 % of FaME respondents was of 'Yes' opinion, 32 % was of 'Rather yes' answer. For 88 % of responded FaME students is the graphical emendation important term in the way of using scripts and publications.

The processing quality was subject of the next survey question.

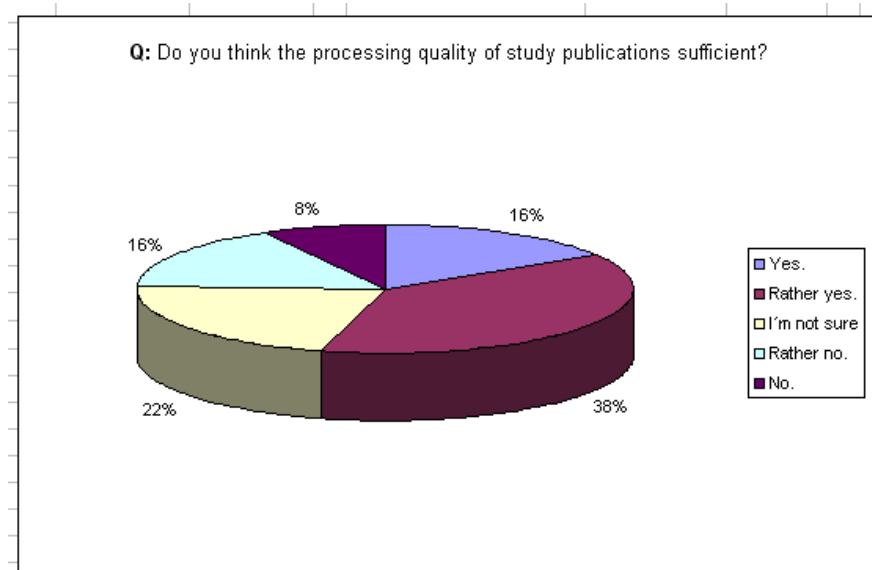


Fig. 9. Question 6 answer results

According to the survey results in Fig. 9, the answers were not unequivocal. 24%<sup>7)</sup> of respondents do not mean the processing quality of publications sufficient in the global meaning. And what about the situation on FaME? The negative opinion of processing quality has 16%<sup>8)</sup> of FaME respondents.

The seventh survey question was in the way of notes, and was optional. Students (respondents) had the opportunity to write that properties of publications, which are negative and decrease the processing quality. So what are these negative properties?

- bad lucidity
- misprints
- graphical processing quality
- bad understandability
- lack of explaining graphs or images
- summary absence at the end of chapters

The eighth question was in the economical way. The object of this question was to analyse, if the students think the price adequate to the quality of publications. The results are in the Tab. 4.

<sup>7)</sup>16 % of 'Rather no' and 8 % of 'No' answer

<sup>8)</sup>8 % of 'Rather no', 8 % of 'No' answers

Tab. 4. Question 8 answer results

Q: What do you think about the price of publications?		
Answer	% of global share	% of FaME TBU share
It's adequate.	54 %	36 %
It isn't adequate.	46 %	64 %
$\Sigma$	100 %	—

The results of Question 8 is interesting. The global meaning was, that the price is adequate. Of this opinion are 54 % of all the respondents. The situation on FaME is quite surprising. Most of FaME respondents (64 %) think, that the price isn't adequate to the quality.

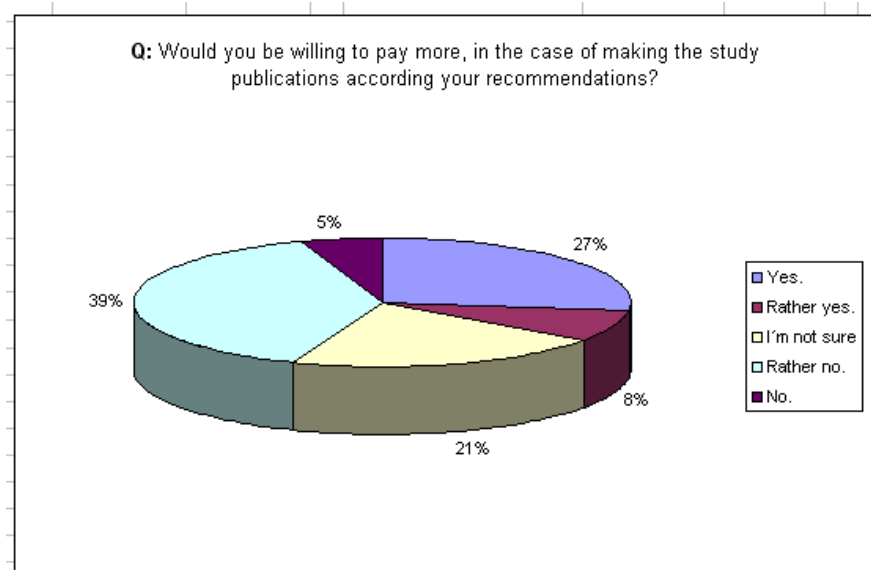


Fig. 10. Question 9 answer results

Fig. 10 brings the results of ninth question. Objective of this question was to know, if the price meaning by respondents is influenced by their subjective meaning of publication quality. So I wanted to know, if they would be willing to pay more, when the publications were made by their preferences. 35 % was of positive answers<sup>9)</sup>. The negative answer according their opinions had 44 %<sup>10)</sup> of all the respondents. As we can see 21 % isn't sure. Strictly negative answer ('No') had 5 % of respondents. The situation on FaME is more strictly oriented to the negative opinions. 44 % FaME respondents answered 'Rather no' and 8 % strictly 'No'. In the positive way answered 32

<sup>9)</sup>27 % of 'Yes', 8 % of 'Rather yes'

<sup>10)</sup>39 % of 'Rather no', 5 % of 'No' reactions

% (20 % FaME respondents wrote strictly ‘Yes’). The question for the results is, if could be the respondents preferences applicable in the real publication processing conception.

The next question was tied up with idea of making the L<sup>A</sup>T<sub>E</sub>X template for all the future publications of faculty. The idea was in the way of ‘processing standard unification’.

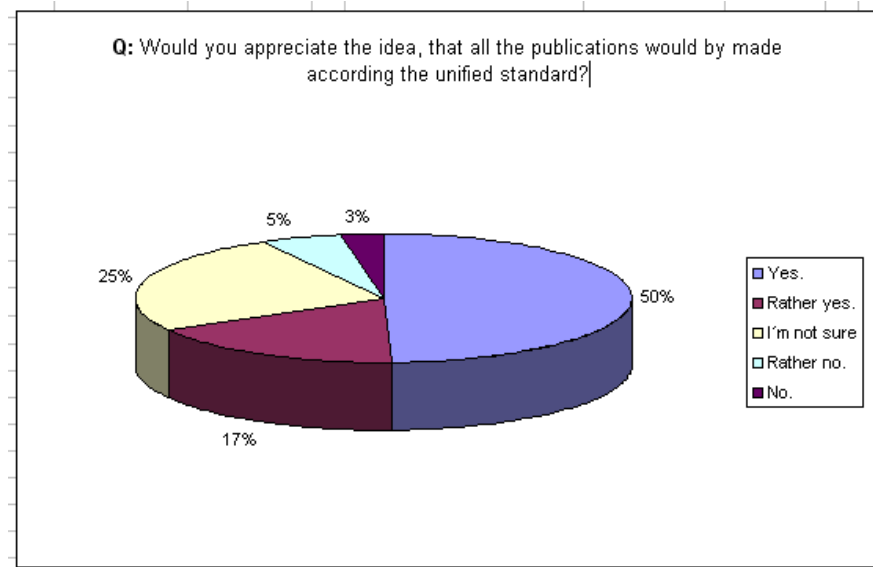


Fig. 11. Question 10 answer results

Results could be seen in Fig. 11 and I have to say, the global result was quite surprising for me. 50 % of whole the respondent count had positively (‘Yes’) answered. The negative answers was only at 8 %<sup>11)</sup> of global share. Interesting is the count of ‘note sure’ respondents: 25 %.

The next two survey question. The objectives were these two terms: coloured print and illustrations.

Tab. 5. Question 11 answer results

Q: Would you appreciate the coloured print in publications?		
Answer	% of global share	% of FaME TBU share
Yes.	66,7 %	68 %
I'm not sure.	14,4 %	20 %
No.	18,9 %	12 %
$\Sigma$	100 %	—

<sup>11)</sup>5 % of ‘Rather no’, 3% of strictly ‘No’

Tab. 6. Question 12 answer results

<b>Q: Would you appreciate the presence of illustrations in publications?</b>		
<b>Answer</b>	<b>% of global share</b>	<b>% of FaME TBU share</b>
Yes.	50,5 %	40 %
Rather yes.	30,6 %	32 %
I´m not sure.	0 %	0 %
Rather no.	16,2 %	24 %
No.	2,7 %	4 %
$\Sigma$	100 %	—

The situation of question 11 answer results (Tab. 5) were quite similar in the global and FaME way. 68 % of respondents would appreciate the coloured print in publications. The future question could be the range of coloured objects and the scale of colours. 18,9 % of all the respondents have the negative opinion and 12 % of FaME respondents have answered ‘No’.

Let´s have a look at the Tab. 6. The results were really suprising for me. We can see that in global way 81,1 %<sup>12)</sup> of respondents thinks the presence of illustrations as a positive idea. The situation on FaME was comparable. Interesting in the case of this question results was, that nobody has answered by ‘I´m not sure’.

Tab. 7. Question 13 answer results

<b>Q: Do you mean the printed publications as a hangover in now a days?</b>		
<b>Answer</b>	<b>% of global share</b>	<b>% of FaME TBU share</b>
Yes, I mean.	11,7 %	12 %
No, I don´t mean.	88,3 %	88 %
$\Sigma$	100 %	—

In the now a days IT world, many of people use rather the digital equivalents to the previous things. The objective of another question was to discover meaning of respondents to the printed publications. Is it really ‘old-school’ thing? The question results say that not. 88 % of all the respondents (the FaME is of that same standard) doesn´t mean the printed publications as a today´s hangover. Acording my opinion it´s very good result, and printed publications have still purpose and efficiency.

<sup>12)</sup>50,5 % of ‘Yes’, 30,6 % of ‘Rather yes’



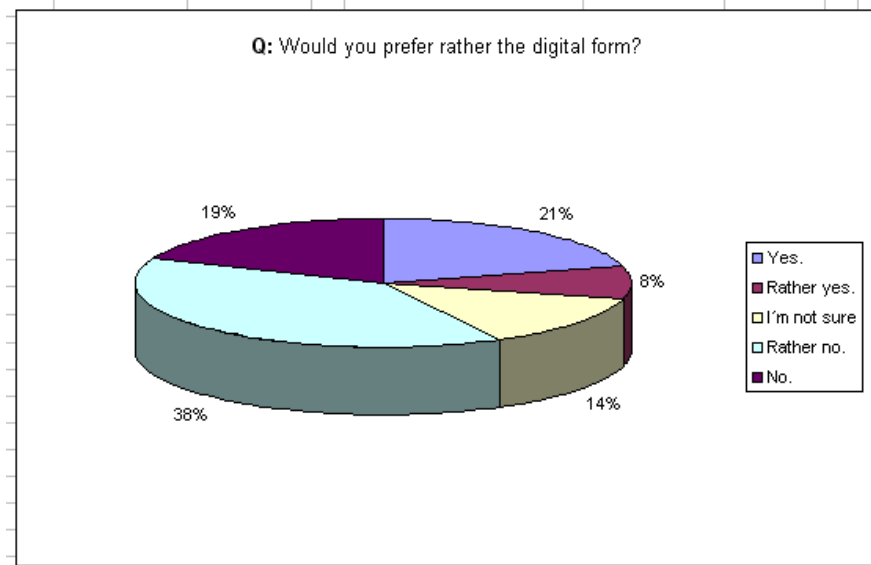


Fig. 12. Question 14 answer results

In the way of previous idea, I wanted to analyse the opinions for the digital forms of the publications. The answer results are brought by Fig. 12. 57 % of respondents are of negative opinion for using rather the digital publications. 19 % of respondents have chosen strictly ‘No’ answer. Globally we can say that the classical printed form has still the majority share. Interesting is but the share of strictly ‘Yes’ opinion: 21 %. FaME respondents are of the same opinion, and 60 %<sup>13)</sup> of them have answered in the negative way. Future question is, if the share of digital form supporters will increase. Maybe in the next years will be the digital form preferred as well and printed ones will be meant as above standard item.

Tab. 8. Question 15 answer results

Q: Would you be willing to pay for the digital form of publications?		
Answer	% of global share	% of FaME TBU share
Yes, I would.	27,9 %	32 %
No, I don't mean.	72,1 %	68 %
$\Sigma$	100 %	—

Question 15 continued in digital form name. I was interested in the possibility of paying the digital form. The results (Tab. 8) were according my expectation. 72,1 % of respondents wouldn't be willing to pay for the digital form. In this way (paid digital publications) there are many questions. For example the license of this form

<sup>13)</sup>44 % of ‘Rather no’, 16 % of ‘No’.

and security assuring. The other problem could be the output format... This idea but has also advantages: minimal costs in the way of making and publishing, easy way of distribution and no tangible output sources need.

Tab. 9. Question 16 answer results

<b>Q: Would you be willing to participate on making of publications?</b>		
<b>Answer</b>	<b>% of global share</b>	<b>% of FaME TBU share</b>
Yes.	27 %	20 %
I don't know.	42,3 %	44 %
No.	30,6 %	36 %
$\Sigma$	100 %	—

The last question objective was: respondent's interest in the way of helping with publications making. I analysed the reactions for possibility of participation on the making process. Results are available in Tab. 9. According my opinion, decisive results are the positive ones. Globally 27 % of respondents would be interested in the cooperation with publications making help. 20 % of FaME respondents would help with making process. Future question could be scope of helping activities and responsibility. I think it could be great opportunity for both of groups. Group of students, and the publication makers.

This survey of course means the answers of responded students. Many areas of the questions could be more concrete, or globally oriented. I think that the basis (global meaning) was described and has shown, that the publishing of study publications is important and necessary activity.

## 4 L<sup>A</sup>T<sub>E</sub>X SYSTEM WORK CONCEPTION

As I've already written, L<sup>A</sup>T<sub>E</sub>X is oriented as a programme language, and the communication with the PC is based on setting commands in specific programme environment. The conception is quite simple:

As a user I have to have installed the L<sup>A</sup>T<sub>E</sub>X core system, which is based on the T<sub>E</sub>X. This core has instructions for compatibility with 'upper' software tools, in which we're able to communicate with core. I've worked in the name of my work on PC with MS Windows XP Home operating system, so I've decided to use MikT<sub>E</sub>X 2.7 environment. As a upper GUI application I've used T<sub>E</sub>XnicCenter 1 Beta 7.01. There are many possibilities and solutions and the great advantage is the normalised working conception. What does it mean? It isn't important which core, or 'upper' distribution you will use. The commands are still the same. The distributions are different only in OS support and some functions in the way of user friendly politics.

As a programme language has L<sup>A</sup>T<sub>E</sub>X some rules, and now I'd like to show the basic work conception.

### 4.0.1 Installing the software

Firstly we will need the installation files. The MikT<sub>E</sub>X distribution is downloadable from it's project site <http://www.miktex.org>. After downloading current install file, and it's running we're able to influence the basic installation options.<sup>14)</sup>

After the installation is done, we'll have to set up the MikT<sub>E</sub>X system.<sup>15)</sup> For the settings has MikT<sub>E</sub>X internal application called 'settings' (it's easy to find it in 'START' group of applications in MS Windows environment. The other possibility is find this application directly in the MikT<sub>E</sub>X program folder (the default installation path is: 'C:\Program Files\MiKTeX 2.7\miktex\bin\...').

On the card 'Languages', we choose that languages, which we will use (it's important to choose current languages to say system to use specific rules of chosen languages). Then on the card 'Packages' we choose packages which could be useful for us. The last step is refreshing the file database and updating formats on the card 'General'.

Now we have prepared the core system. At this moment I recommend to install the

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<sup>14)</sup>The images of installation are attached in Appendix P III

<sup>15)</sup>The images of configuration images of MikT<sub>E</sub>X are in Appendix IV

document viewer applications (according of planned outputs). For PDF documents for example the default Adobe application Acrobat Reader, for PS for example Ghost view. MikTeX has direct support and viewer for DVI files, but I think that it won't be used as well.

The last objective is installing the 'upper' GUI application. As I've already written I usually use the TeXnicCenter software tool. It's downloadable from it's site <http://www.toolscenter.org/>. The installation is without problem and the head task is setting in the programm. After running of application, should be TeXnicCenter find and automatically set up the output profiles for DVI, PDF and PS.

Now are we really prepared to work with L<sup>A</sup>T<sub>E</sub>X.

#### 4.1 L<sup>A</sup>T<sub>E</sub>X commanding basics

L<sup>A</sup>T<sub>E</sub>X command language are comparable for example to HTML or XML language. Each document has to have two important parts: preamble and it's own body. For T<sub>E</sub>X (L<sup>A</sup>T<sub>E</sub>X) commands are typical two facts: presence of backslash symbol in front of each command, and using the parametres, as additional influence of the commands. Preamble is defined with command `\documentclass`, with it's parametres. The preamble part is used to define the additional packages (`\usepackage`) and the other by user set definitions. The commands in preamble influence the future body commands, or directly influence the output, but aren't typeset in the output document.

The document body is defined by beginning of the body and it's ending. For this we use pair of commands. For beginning: `\begin{document}` and `\end{document}` for ending. This conception (begin, end) is typical for most of environments in L<sup>A</sup>T<sub>E</sub>X system.

Now I'd like to show practically the facts above. The minimal source code is:

```
\documentclass
\begin{document}
\end{document}
```

This source code but isn't correct because the parametres are missing. So let's show simple but real source code:

```
\documentclass[czech,a4paper,12pt]{article}
\usepackage{babel}
\usepackage[T1]{fontenc}
\usepackage[cp1250]{inputenc}
\begin{document}
The document text and commands will be written here.
\end{document}
```

Now I'd like to explain the source code step by step:

- `\documentclass[czech,a4paper,12pt]{article}`  
as we can see the command above has two parameter types. The first type is in the square brackets. `[czech]` parameter defines the language of the typeset document. `[a4paper]` parameter defines the paper size of output document. `[12pt]` defines the height of used fonts (same as in the WYSIWYG editros like MS Word). The other group of parametres is defined by braces. `{article}` parameter defines the behaviour of document. Article class has specific behaviour for numbering, sections and the other document parametres. Article is used for articles. Then we have following classes: `report`, `book`, `letter` and `slides`.
- `\usepackage{babel}`  
This command defines concrete package to use. The 'calling' of concrete package is defined in the package manual (it's possible to get it via the Package manager of MikTeX software). This concrete command calls the babel package, which improves the typesetting of concrete language.
- `\usepackage[T1]{fontenc}`  
This package improves the hyphenation of words.
- `\usepackage[cp1250]{inputenc}`  
Package to define the coding of document text.
- `\begin{document}`  
Command opening the body of document.
- `\end{document}`  
Command ending the body of document.

#### 4.1.1 Sections and subsections

The sections are realised by `\section{'the name of section'}`, and `\subsection{}` or `\subsubsection{}`. Advantage is, that the the sections are automatically numbered. If we don't want to have section numbered, we'll have to use the '\*' symbol: `\section*{'the name of section'}`.

#### 4.1.2 Font sizes

The font sizes are set by commands too. Of course we have the major rule defined in the preamble, but sometimes it's necessary to change the font size. For example the normal size si defined by command: `\normalsize{'current text for used size'}`. We are able to use these commands:

- `\tiny` – [5pt font]
- `\scriptsize` – [7pt font]
- `\footnotesize` – [8pt font]
- `\small` – [9pt font]
- `\normalsize` – [10pt font]
- `\large` – [12pt font]
- `\Large` – [14pt font]
- `\LARGE` – [17pt font]
- `\huge` – [20pt font]
- `\Huge` – [25pt font]

#### 4.1.3 Font modes

As in other typesetting system the  $\text{\LaTeX}$  one is possible to set the font in needed mode. The formula of use is the same as above: `\'mode command'\{\'text'\}`. The modes are:

- `\textbf` – **bold face style**
- `\textit` – *italic style*
- `\textsf` – sans serif style
- `\textsl` – *slanted style*
- `\texttt` – type writer style
- `\emph` – emphasized style
- `\sc` – SMALL CAPS STYLE

#### 4.1.4 Text aligning

This option isn't anything above standard too. We're standardly able to align to: right, left and center. These commands are typical for  $\text{\LaTeX}$  environmental code types. So they're defined by `\begin{}` and `\end{}` commands.

Aligning to right is defined as:

The source code:

```
\begin{flushright}
Text aligned to the right.
\end{flushright}
```

The output will be:

Text aligned to the right.

Aligning to the left is the same, but we use parameter `{flushleft}` and for centering `{center}`. The global center aligning is possible to set by command `\centering`.

#### 4.1.5 L<sup>A</sup>T<sub>E</sub>X listing environments

At this place I'd like to show specific environments. Environments used for: listing and enumerating. As the other environments are these ones defined by `\begin{}` and `\end{}` commands with specific parametres.

The parameter for listing is `{itemize}`, for enumerations is `{enumerate}`. The current items of the lists or enumerations are done by command `\item`. The source code (for example for enumeration) appears:

The source code:

```
\begin{enumerate}
\item{Item 1}
\item{Item 2}
\end{enumerate}
```

The output will be:

1. Item 1
2. Item 2

For more difficult enumeration scheme, we use the same concept. So:

The source code:

```
\begin{enumerate}
\item{Item 1}
\begin{enumerate}
\item{Item}
\item{Item}
\item{Item}
\end{enumerate}
\item{Item 2}
\end{enumerate}
```

The output will be:

1. Item 1
  - (a) Item
  - (b) Item
  - (c) Item
2. Item 2

This conception of commands is similar to the `itemize` environment too. in the case of need, it isn't poble to combine the `itemize` and `enumeration` environments.

#### 4.1.6 Mathematical environment

Maths... The oportunity to rise of T<sub>E</sub>X. Yes, it was need of high quality mathematical typesetting system and this, is one of the most powerful advantage of T<sub>E</sub>X (L<sup>A</sup>T<sub>E</sub>X)

system. There isn't any formula difficult enough to typeset it via L<sup>A</sup>T<sub>E</sub>X.

Firstly I have to say, that all the mathematical DTP tasks are realised in mathematical mode. Each of these modes has it's purpose and at this place I'd like to define them:

The first basic mode for mathematical formula uses very simple syntax: `$'formula'$`. This mode is great for the cases, that we want to insert into the text some mathematical symbol, or simple formula. The practical use:

The source code:

Let's typeset a very simple formula: `$c=\sqrt{a^2+b^2}$`. As we can see, the formula isn't separated from the text.

The output will be:

Let's typeset a very simple formula:  $c = \sqrt{a^2 + b^2}$ . As we can see, the formula isn't separated from the text.

As we can see, the construction of mathematical formula is quite difficult and it requires some experience, but it is the right way how to typeset the formulas correctly.

Let's go to the another mathematical mode. In case that we want to have formula separately of the text, and we want to align the formula to the center. The right solution for us is `\displaymath` mode. The use is following:

The source code:

```
\begin{displaymath}
c=\sqrt{a^2+b^2}
\end{displaymath}
```

The output will be:

$$c = \sqrt{a^2 + b^2}$$

The code could be set (according the T<sub>E</sub>X standard):

The source code:

```
$$
c=\sqrt{a^2+b^2}
$$
```



The output will be same as in previous version:

$$c = \sqrt{a^2 + b^2}$$

The last possibility is right solution for equations. What does it mean? It means, that we need typeset formula aligned to the center, and have it numbered. In previous modes, isn't the numbering done. The equation mode is used by this way:

The source code:

```
\begin{equation}
c=\sqrt{a^2+b^2}
\end{displaymath}
\end{equation}
```

The output will be:

$$c = \sqrt{a^2 + b^2} \tag{1}$$

Now I'd like to show typesetting of very basic mathematical tasks. The difficulties of formulas arise from the combinations of the basic commands.

The source code:

```
\begin{displaymath}
x_1, a_{n+1}, F_x
\end{displaymath}
\begin{displaymath}
x^2, y^{3x+2}, a^e
\end{displaymath}
\begin{displaymath}
\frac{2}{3}, \frac{2}{x+1},
\frac{\frac{2}{3}}{x-3}
\end{displaymath}
\begin{displaymath}
\sqrt[3]{2}, \sqrt[10]{(x^2 + y^2)}
\end{displaymath}
\begin{displaymath}
\vec{a}, \overrightarrow{XY}
\end{displaymath}
\begin{displaymath}
\sum_{i=1}^n a_i + 3
\end{displaymath}
\begin{displaymath}
\pi^2 \int_{x_1}^{x_2} f(x)^2 dx
\end{displaymath}
```

The output will be:

$$x_1, a_{n+1}, F_x$$

$$x^2, y^{3x+2}, a^e$$

$$\frac{2}{3}, \frac{2}{x+1}, \frac{\frac{2}{3}}{x-3}$$

$$\sqrt[3]{2}, \sqrt[10]{(x^2 + y^2)}$$

$$\vec{a}, \overrightarrow{XY}$$

$$\sum_{i=1}^n a_i + 3$$

$$\pi^2 \int_{x_1}^{x_2} f(x)^2 dx$$

#### 4.1.7 Table environment

The table environment is used for effective making of tabulars. `Table` and `tabular` environments are the typical ones of L<sup>A</sup>T<sub>E</sub>X. Each of them use the ‘begin – end’ conception. The practical use means, that the `tabular` commands set is inside the array of `table` commands. The `tabular` is looking after the tabular, the `table` is looking after, numbering, caption, aligning and the other parametres of tabulars.

Firstly the `tabular` environment using. The use will be clear after showing he example:

The source code:

```
\begin{tabular}{|c||c|c|c|c|}
\hline
No. & $U$ [V] & $I$ [mA] & R [$\Omega$]\
\hline
1 & 10 & 1 & 10 000\
2 & 20 & 2 & 10 000\
3 & 30 & 3 & 10 000\
4 & 40 & 4 & 10 000\
5 & 50 & 5 & 10 000\
\hline
\end{tabular}
```

So, what it’s in the code? As we can se the command array is defined by commands `\begin{tabular}` and `\end{tabular}`. The interesting is parameter `{|c||c|c|c|}`. This command shows the construction: the tabular will have 4 columns, and each of this column will have text aligning to center (coded as ‘c’. The other coding could be for example: `{|c||l|r|r|}`. The parameter ‘l’ means aligning to left, ‘r’ to right. The symbol ‘|’ means the vertical lines between columns, and of course it’s optional for use. The horizontal lines are realised by ‘`\hline`’ command. Everything will be to easy understand, if we see the result:

The output will be:

No.	$U$ [V]	$I$ [mA]	R [ $\Omega$ ]
1	10	1	10 000
2	20	2	10 000
3	30	3	10 000
4	40	4	10 000
5	50	5	10 000

Now some information about `table` environment using. The best way is the example:

The source code:

```
\begin{table}[htb]
\centering
\begin{tabular}{|c||c|c|c|}
\hline
No. & $U$ [V] & $I$ [mA] & R [$\Omega$]\\
\hline
1 & 10 & 1 & 10 000\\
2 & 20 & 2 & 10 000\\
3 & 30 & 3 & 10 000\\
4 & 40 & 4 & 10 000\\
5 & 50 & 5 & 10 000\\
\hline
\end{tabular}
\caption{Tabular caption}
\end{table}
```

At first we're able to see, the inside placing code, of `tabular`. The upper environment is of course `table`. This is defined standardly with `\begin{table}` and `\end{table}` with begin parameter `[htb]`. This parameter is optional and means the placing the `tabular`. In  $\text{\LaTeX}$  is user standardly unable to set `tabular` to the two pages (the `tabular` should be only on one. So the `tabular` object is 'floating object'. And in case that there isn't enough place to placing `tabular`,  $\text{\LaTeX}$  will place it to the next page according the parameter. The parameters could be combined according the preferences, and we have four of them: `[h]` for 'here' placing, `[t]` for placing to the top of the page, `[b]` for the bottom placing and `[p]` for placing it separately to the new page.

Then could we see the command `\centering`, that means that the text set in this environment will be aligned to the center. The last command is `\caption{}`. By this command we give to the `tabular` it's caption. By this use, will be the caption automatically numbered. If we don't want to have it numbered we use the standard `*` symbol. So the command will appear: `\caption*{'text'}`.

The output will be:

No.	$U$ [V]	$I$ [mA]	R [ $\Omega$ ]
1	10	1	10 000
2	20	2	10 000
3	30	3	10 000
4	40	4	10 000
5	50	5	10 000

Tab. 10. Example `tabular`

L<sup>A</sup>T<sub>E</sub>X system support for tables isn't by default way really strong, but it's enough. The other options for use, are possible by additional packages such as `colortbl`, `longtable` and many others.

#### 4.1.8 Figure environment

The last environment I'd like to introduce is `figure` for inserting the images. It's little bit complicated. We need to know the output, which we will use. According the output, uses the T<sub>E</sub>X core (MikT<sub>E</sub>X in our case) different process. Each of this process has it own's rules. For output to PS, we'll be able standardly use only **.EPS** images (processed by `latex`), for PDF (processed by `pdflatex`) we are able use the other formats too, including **.GIF**, **.BMP** or **.JPG**. What's important in the way of using images: we have to add to the preamble the command `\usepackage{graphicx}`, which means, that we call the `graphicx` package, which has the support for working with images.

OK, I have the image in **.JPG** format, and I'd like to insert it to the page. I'll make my output as a PDF file. So let's have a look at:

The source code:

```
\begin{figure}[htb]
\centering
\includegraphics[width=0.3\hsize]{Business_pair.jpg}
\caption{Business pair}
\end{figure}
```

As we can see the syntax is similar to the `table` environment. In this case we have only one unknown command: `\includegraphics[width=0.5\hsize]{Business_pair.jpg}`. The first command parameter `[width=0.3\hsize]`, influences the size of typeset image. According the command we can see, the horizontal size of image will be set as a 0.3 of total horizontal space. The last parameter `{Business_pair.jpg}` means the path, and name of the current image. I have the image in the same folder as the main **.TEX** file, so I can leave as a parameter only the name of the image file.

The output will be:

All the commands in this chapter are really only basics. Basics for simple first document. Basics to show how the L<sup>A</sup>T<sub>E</sub>X works. The possibilities of this DTP system are unlimited because of many packages. The disadvantage is, that user has to learn the new commands of specific new packages. Important is, that the conception of work is still the same, strong and full of strange possibilities. And as I've already written, this bachelor work is the great demonstration of this system.

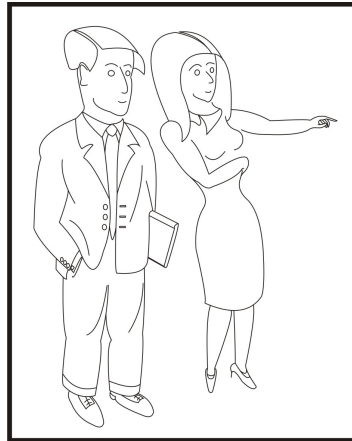


Fig. 13. Business pair

## 4.2 Used $\LaTeX$ software tools

### 4.2.1 Mik $\TeX$ 2.7

This distribution of  $\LaTeX$  I've used for this work. Why Mik $\TeX$  2.7? It has many advantage: it's open-source and it has great support and for last: it's 'alive'. Very often updatable, stable, independent and 'invisible'. After installing and sometimes updating and adding packages, it isn't important to have a care about it. The latest version is more powerful by direct support of Xe $\TeX$  better support for pdf $\TeX$  and METAPOST. The MS Windows Vista is now officially supported.[11]

This system is distributed for free by internet download possibility, but it's to have the Mik $\TeX$  distribution on DVD disc. As I've ment the Mik $\TeX$  is independent and the typesetting is possible for example via command line. Fact is, that this way is quite uncomfortable. But there is that possibility. Ever act is possible to do via GUI or command line with the same effect. Other advantage is small hardware requirements and internal DVI viewer.

Mik $\TeX$  is famous of it's simple effective work, easy installation and fonts and packages support. You're able to download the package for the repositories from whole of the world.

The fonts... Yes, it maybe doesn't seem like so, but it's such a big problematic. With the operating system has the user possibility to work with a few fonts. But the possibility of using another ones could be problematic. Cause most of mighty DTP systems are expensive for custom users and many fonts are commercial too. Of course with bought DTP system you'll have the oportunity legally use of the licenced fonts in the way of current DTP system. The solution could be using the free fonts. Advantage of

L<sup>A</sup>T<sub>E</sub>X is presence of many fonts in the basic installation and support for new ones. The commercial fonts are able to be used by L<sup>A</sup>T<sub>E</sub>X too. And each user can try of making it's own fonts. The possibilities of METAFONT are great.

#### 4.2.2 T<sub>E</sub>XnicCenter 1 Beta 7.01

T<sub>E</sub>XnicCenter is open source application, designed as a editor exclusively for MikT<sub>E</sub>X distribution. It's advantage is user friendly environment, with count of tools for T<sub>E</sub>X working simplifications. But it isn't necessary to use these tools. T<sub>E</sub>XnicCenter is MS Windows application, very easy to use and install, supporting the direct output for DVI, PS and PDF formats. One of it's advantage is good FAQ system and technical support. For users, who will want to modify the source codes, is available the downloading of core files from official web <http://www.texniccenter.org/>.

## 5 L<sup>A</sup>T<sub>E</sub>X SYSTEM WORK RESULTS

At this place I'd like to introduce my advanced L<sup>A</sup>T<sub>E</sub>X works. Works which are in practical use and are available to use. I had the great opportunity with this bachelor work to try the real application of L<sup>A</sup>T<sub>E</sub>X DTP for Czech Statistical Society and for Informatics and Statistics Department of Tomas Bata University in Zlín. On following pages I'll show the results of my practical work.

Although the major share of used software tools was in the way of L<sup>A</sup>T<sub>E</sub>X, I've used a lot of competitive, or support software tools. All the used software tools are listed in the Appendix P XI.

### 5.1 Making the 'inner pages' of publications

In the way of making the 'inner pages', I'd like to suggest a solution on the basis of Czech Statistical Society bulletins. This society has for the DTP typesetting L<sup>A</sup>T<sub>E</sub>X template. This template is a guaranty of standard of typesetting. In the way of this theme I'd like to mean one practical term: Corporate Identity.

Each of us feels the definition of this term. The logos, leitmotifs, colours. Originality and idea independence. I think, that this template is part of Corporate Identity too. Many companies use DTP systems for documents such as annual reports, technical documentation, norms, standards... The DTP templates have the important meaning and purpose.

With the theme of my bachelor work, I recommend to the makers of study publications, and the other publications of course too the L<sup>A</sup>T<sub>E</sub>X system. After the praxis for CSS I have to say that the template is important and necessary for large projects. Necessary in the way of concrete Corporate Identity. Templates, new definitions and styles are the right way for simplification of typesetting works. The great idea is making of manuals for templates.

I'd like to show the result of this conception: the article made for CSS by Ing. Petr Klímek, Ph.D. from Department of Informatics and Statistics, TBU in Zlín. The article was originally made in MS Word. I've converted it to the CSS L<sup>A</sup>T<sub>E</sub>X template standard (the template is attached as the Appendix P V) and the result you're able to see on the following pictures: Fig. 14 to Fig. 25.<sup>16)</sup>

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<sup>16)</sup>This article is able to find in the publication: Stříž, P., Dohnal, G., Antoch, J.: *STAKAN 2007 — sborník příspěvků*. Martin Stříž Publishing, 2007. ISBN 978-80-87106-07-5 (CD-ROM), with other interesting articles, on which I've cooperated, in the way of typesetting.

The source code of this article is attached as the Appendix P VI. For realisation I've needed only  $\text{\LaTeX}$  system and the Gimp 2.0 application for working with attached images. The Gimp 2.0 application I've used, because of it's freeware licence and great possibilities as a bitmap editor.

This example article is one of the articles, I've typeset. After this experience I want to suggest this conception of digital work as a model. As a model for making the publications for the academical environment.  $\text{\TeX}$  was born as the academical tool. . . It isn't so utopian idea. Many publications are realised by this way. Quite each university has the Informatics department with people able to programme. So why not in  $\text{\LaTeX}$ ? It's cheap and mighty system and as we can (and will be able), see, the outputs are strongly effective.



## PHILLIPSOVA KŘIVKA V ČR

Petr Klimek

**Abstrakt:** Phillipsova křivka (vztah mezi mírou inflace (uzlové nebo cenové) a mírou nezaměstnanosti) patří bezesporu mezi kontroverzní pojmy ekonomické teorie. Její aplikace jsou značně široké, nicméně konkrétní specifika Phillipsovy křivky je poplátná teorií mezí a cen, z které se při její konstrukci vychází. Člen následujícího článku je empiricky ověřit na reálných datech za českou ekonomiku v letech 1997-2006, do jaké míry lze anticyklovat současný vývoj vztahu inflace a nezaměstnanosti v ČR pomocí variantně specifikovaných rovnic Phillipsovy křivky, vycházejících především z keynesiánského a později z neoklasického pojetí.

**Clíčová slova:** inflace, nezaměstnanost, očekávání, Phillipsova křivka.

### 1. Klasická Phillipsova křivka

V roce 1958 popsal A. W. Phillips dlouhodobou závislost mezi mírou nezaměstnanosti a relativní změnou nominálních mezd ve Velké Británii za léta 1861-1957, což byl důležitý mezník ve vývoji keynesiánského ekonomie. Původní nepřímá závislost mezí inflace a zmičené relativní nezaměstnanosti byla v pozdějších aplikacích Phillipsovy křivky nejčastěji modifikována na nepřímý lineární vztah mezi tempem celkové inflace a změnou míry nezaměstnanosti, jinak řečeno se předpokládalo, že platí:

$$\Delta P/P = f(U), \tag{a}$$

Phillipsova křivka vycházela z úvahy, že klesající míra nezaměstnanosti zvyšuje, při ostatních podmínkách neměnných, míru inflace, přičemž nulová úroveň míry nezaměstnanosti je teoreticky konzistentní s nekonečnou úrovní inflace. Jejími charakteristickými rysy jsou podle [3]:

- záporná směrnice,
- přibližně hyperbolický tvar,
- průsečík s horizontální osou v bodě  $U^N$ , představujícím tzv. přirozenou míru nezaměstnanosti.

Bolužel v průběhu 70. let minulého století tento model v důsledku stagflace ekonomiky selhal a neudrželátá původní Phillipsovy křivce. Bylo zřejmé, že vztah mezi inflací a nezaměstnaností je složitější.

### 2. Dlouhodobá Phillipsova křivka

M. Friedman a E. Phelps v roce 1967 zásadně ovlivnili další vývoj Phillipsovy teorie, když upozornili na to, že Phillipsova křivka opomíjí vliv očekávané inflace. Výsledkem zkoumání těchto evidentních rozporů mezi původní specifickými Phillipsovy křivky a ekonomickou realitou byla tedy její neoklasická modifikace. V jejích pojetí má rovnice dlouhodobé Phillipsovy křivky tvar

$$\Delta P/P = \pi_T = \pi_T^e - k(U_T - U^N), \quad T = 1, 2, \dots, T, \tag{b}$$

kele  $\pi_T^e$  je očekávaná míra inflace a  $k$  je koeficient efektu rozdílu skutečné a přirozené míry nezaměstnanosti na inflaci [1].

### 3. Očekávaná inflace

Z výše uvedeného vidíme, že podstatný vliv na průběh Phillipsovy křivky ve tvaru (b) má zvolený způsob inflačních očekávání. Jak tato očekávání určit? Existují dvě základní pojetí očekávané inflace. První z nich tvrdí, že očekávání jsou adaptivní (zakládají se na dřívějším vývoji inflace). Druhým možností je přístup racionálních očekávání, který říká, že se lidé při svých očekáváních nedopouštějí systematických chyb. V našem článku zvolíme pro jednodušnost první možnost. Pokud vyjádříme očekávanou inflaci pomocí adaptivních očekávání, dostáváme podle [2] následující rovnici (c):

$$\pi_T^e - \pi_{T-1}^e = g(\pi_T - \pi_{T-1}^e), \quad 0 < g \leq 1. \tag{c}$$

Rovnice (c) popisuje proces učení, takže podle (c) adaptivní očekávání ( $g$  je koeficient adaptace), týkající se odhadu míry inflace, je upraveno na základě zkušenosti v každém období o část rozdílu mezi skutečnou inflací v období  $t$  a její očekávanou mírou v předchozím období, neboli (c) lze přepsat do tvaru (d) pro lepší možnost výpočtu.

$$\pi_T^e = g\pi_T + (1-g)\pi_{T-1}^e, \quad 0 < g \leq 1. \tag{d}$$

### 4. Odhad Phillipsových křivek pro Českou republiku

Varianta specifika Phillipsových křivek nyní ověříme na reálných datech za českou ekonomiku v období 1. čtvrtletí 1997 až 4. čtvrtletí 2006. Máme tedy celkem k dispozici 40 pozorování. Čtvrtletní časové řady o procentní míře inflace a nezaměstnanosti v ČR byly vypracovány z údajů ČSU. Nejprve se budeme zabývat Phillipsovou křivkou v klasickém keynesiánském pojetí. Vstupní údaje jsou v Tabulce 1 na straně 14.

Fig. 14. First page of Dr. Klimek's article

Fig. 15. Second page of Dr. Klimek's article

Tabulka 1: Data pro výpočet Phillipsovy křivky  
Vztah mezi inflací a nezaměstnaností ( $n = 40$ )

(1) Rok	(2) Kvartál	(3) Inflace $\pi_t$	(4) Nezaměstnanost $U_t$	(5) Očekávaná inflace $\pi_t^e$
1997	Q1	6.8	4.3	6.800000000
	Q2	6.8	4.5	6.800000000
	Q3	10.3	5.0	7.850000000
	Q4	10.0	5.4	7.850000000
1998	Q1	13.4	5.9	8.495000000
	Q2	12.0	5.9	9.966500000
	Q3	8.8	6.8	10.576650000
	Q4	6.8	7.3	10.043585000
1999	Q1	2.5	8.4	9.070509500
	Q2	2.2	8.4	7.099356650
	Q3	1.2	9.0	5.629549655
	Q4	2.5	9.0	4.300684759
2000	Q1	3.8	9.5	3.760479331
	Q2	4.1	8.7	3.870634872
	Q3	4.1	8.5	3.939444411
	Q4	4.0	8.3	3.957611087
2001	Q1	4.1	8.5	4.00327761
	Q2	5.5	8.0	4.450229433
	Q3	4.7	8.2	4.525160603
	Q4	4.1	7.8	4.397612422
2002	Q1	3.7	7.7	4.188328695
	Q2	1.2	7.0	3.291830087
	Q3	0.8	7.2	2.544281061
	Q4	0.6	7.3	1.960969743
2003	Q1	-0.4	7.6	1.252697720
	Q2	0.3	7.5	0.966888404
	Q3	0.0	8.0	0.676821883
	Q4	1.0	8.1	0.773775318
2004	Q1	2.5	8.7	1.291642723
	Q2	2.9	8.2	1.774149906
	Q3	3.0	8.2	2.141904634
	Q4	2.8	8.2	2.339333454
2005	Q1	1.5	8.4	2.087533418

Fig. 16. Third page of Dr. Klimek 's article

Tabulka 1: Pokračování

(1) Rok	(2) Kvartál	(3) Inflace $\pi_t$	(4) Nezaměstnanost $U_t$	(5) Očekávaná inflace $\pi_t^e$
	Q2	1.8	7.8	2.001273392
	Q3	2.2	7.8	2.039966981
	Q4	2.2	7.8	2.071972865
2006	Q1	2.8	8.0	2.217578292
	Q2	2.8	7.1	2.334062634
	Q3	2.7	7.0	2.407250107
	Q4	1.7	7.7	2.265800855

Zdroj: Upraveno podle dat CSÚ.

**A. Klasický model – keynesiánský (krátkodobá Phillipsova křivka)**

Pro výpočet regresního modelu využijeme MS Excelu modul Analýza dat. Odsledujeme neznámé parametry rovnice (1)

$$\pi_t = \beta_0 + \beta_1 U_t; \beta < 0. \quad (1)$$

Po zadání údajů získáme v tabulkách 2, 3 a 4, uvedených na straně 16, následující výsledky.

Rovnice lineárního modelu potom je:

$$\hat{\pi}_t = 16,596 - 1,685U_t; R^2 = 0,386. \quad (2)$$

Znaménka parametrů jsou sice v pořádku (soulad s modelem (1)), ovšem hodnota koeficientu determinace (Hodnota spoleklivosti  $R^2$ ) je velmi nízká. Zkusíme tedy další model – regresní hyperbolu. Tuto je vyjádřena následující rovnicí (3):

$$\pi_t = \beta_0 + \beta_1 U_t^{-1}; \beta_0 < \beta_1 > 0. \quad (3)$$

Výsledky získáme z tabulek 5, 6, 7, uvedených na straně 17. Potom rovnice regresní hyperbolu má tvar:

$$\hat{\pi}_t = -5,662 + 69,6575U_t^{-1}; R^2 = 0,379. \quad (4)$$

Fig. 17. Fourth page of Dr. Klimek 's article

Tabulka 5: Výsledek (regresní hypotéza)

<b>Regresní statistika</b>	
Národní <i>R</i>	0,615498
Hodnota spolehlivosti <i>R</i>	0,378838
Nastavená hodnota spolehlivosti <i>R</i>	0,302491
Chyba sřt. hodnoty	2,598779
Pozorování	40

Tabulka 6: Celkový test

<b>ANOVA</b>				
Stupně volnosti	SS	MS	F	Významnost F
1	156,6202	156,620200	23,1756308	2,3688E-05
38	256,6388	6,733633		
Celkem	413,1590			

Tabulka 7: Dílčí testy

Koeficienty	Chyba sřt. hodn.	<i>t</i> stat	Hodnota <i>F</i>	Dohrn. 95%	Horní 95%
Hranice	2,017149	-2,807010	0,00784658	-9,74566274	-1,57865
Soubor X 1	14,469240	4,814107	2,3688E-05	40,36504400	98,94796

6

Tabulka 2: Výsledek (regresní přírůk)

<b>Regresní statistika</b>	
Národní <i>R</i>	0,62103089
Hodnota spolehlivosti <i>R</i>	0,38567874
Nastavená hodnota spolehlivosti <i>R</i>	0,369512395
Chyba sřt. hodnoty	2,584428858
Pozorování	40

Tabulka 3: Výsledek (Celkový test)

<b>ANOVA</b>				
Stupně volnosti	SS	MS	F	Významnost F
1	159,3466	159,346600	23,85688618	1,9041E-05
38	253,8124	6,679273		
Celkem	413,1590			

Tabulka 4: Výsledek (Dílčí testy)

Koeficienty	Chyba sřt. h.	<i>t</i> stat	Hodnota <i>F</i>	Dohrn. 95%	Horní 95%
Hranice	2,642316	6,280752	2,34679E-07	11,24664170	21,94482
Soubor X 1	-1,684933002	0,344966	-4,88435	1,9041E-05	-2,38327937

5

Fig. 19. Sixth page of Dr. Klimek's article

Fig. 18. Fifth page of Dr. Klimek's article

**Závěr k bloku A**

Z výsledků je patrné (nízké hodnoty  $R^2$ ), že bude potřeba pro další data opustit kvadratický model a zahrnout další proměnnou do modelu – očekávanou inflaci  $\pi_t^e$ .

**B. Neoklasický model – Friedmanův: Vliv očekávané inflace (dlouhodobá Phillipsova křivka)**

Nyní zahrneme novou proměnnou do našeho modelu; bude to očekávaná inflace

$$\pi_t = \beta_0 + \beta_1 U_t + \beta_2 \pi_t^e; \beta_1 < 0, \beta_2 > 0 \tag{5}$$

K výpočtu očekávané inflace použijeme vztah (4). Otázkou zůstává, jaký zvolit koeficient adaptace  $g$ . V devadesátých letech se jeho hodnota pohybovala kolem hodnoty 0.8. Avšak pro ekonomiku v posledních letech klesla míra koeficientu adaptace díky stabilizaci ekonomiky až na hodnotu 0.2. Pro její výpočet tedy použijeme vztah (adaptací vztah podle vztahů(4)):

$$\pi_t^e = 0.2\pi_t + 0.8\pi_{t-1} \tag{6}$$

Pro náš příklad máme vypočteny hodnoty očekávané inflace podle (6) ve sloupci (5) tabulky 1. Nyní využijeme opět stejný model v Excelu, s tím rozdílem, že budeme mít nyní dvě nezávislé proměnné. Tabulky 8; 9 a 10 na straně 19 nám poskytnou úplné výsledky.

Rovnice odhadované regresní roviny je následující:

$$\pi_t = 6.1268 - 0.79735U_t + 0.8739\pi_t^e; R^2 = 0.740. \tag{7}$$

Znaménka parametrů jsou v souladu s ekonomickou teorií i hodnota  $R^2$  se téměř opírá předchozím modelům ztvárněná. Všechny koeficienty jsou statisticky významné. I celkový F-test (tab. 9) potvrdí významnost celého modelu (hodnota  $F^2$  je poměrně vysoká). Vznoste-li nezaměstnanost o 1%, vyvolá to pokles inflace o 0,797%. Vznoste-li míra očekávané inflace o 1%, vyvolá to vzrůst skutečné inflace o 0,873%.

Nyní pomoci sekvenčního F-testu ověříme přínos zavedení inlačních očekávání do modelu. Celkový součet čtverců  $S_y = \sum (y_t - \bar{y})^2 = 413.150$  s  $(n - 1)$  stupni volnosti charakterizuje celkovou variabilitu proměnné inflace, teoretický součet čtverců  $S_y^{(1)} = \sum (Y_t^{(1)} - \bar{y})^2 = 159.3466$  s 1 stupněm volnosti charakterizuje variabilitu vysvětlenou regresní přímkou, teoretický

Tabulka 8: Výsledky (regresní roviny)

Násobné $R$	0,860021
Násobné $R^2$	0,739637
Hodnota spolehlivosti $R$	0,73663
Násobná hodnota spolehlivosti $R$	1,705091
Chyba sř. hodnoty	40
Pozorování	

Tabulka 9: Celkový test

ANOVA			
Regrese	2	305,5876	152,793800
Residual	37	107,5714	2,907334
Celkem	39	413,1590	
Shrpné volnosti	SS	MS	F
Významnost	F		

Tabulka 10: Důležitosti

Koeficienty	6,126800	2,284272	2,682168
Hranice	-0,797350	0,259731	-3,669910
Soubor X 1	0,872918	0,123080	7,092300
Soubor X 2	0,272918	0,123080	2,13636E-08
Horní 95%	10,75517	1,498430247	0,010867001
Dolní 95%	-1,323617512	-1,323617512	0,003997355
	1,12230		0,023534784

Fig. 20. Seventh page of Dr. Klimek’s article

Fig. 21. Eighth page of Dr. Klimek’s article

Tabulka 11: Pokračování

Rok	Kvartál	Inflace $i_t$	Vyrovnaní
2001	Q4	4.0	3.328329836
	Q1	4.1	3.120740397
	Q2	5.5	3.725338856
2002	Q3	4.7	3.590938402
	Q4	4.1	3.825185808
	Q1	3.7	3.767332754
	Q2	1.2	3.77890182
	Q3	0.8	3.112422728
	Q4	0.6	2.592125222
2003	Q1	-0.4	1.825886138
	Q2	0.3	1.606203215
	Q3	0.0	0.915617303
	Q4	1.0	0.776937863
	Q1	2.5	0.513246200
	Q2	2.9	1.153531843
2004	Q3	3.0	1.364277657
	Q4	2.8	1.497957609
	Q1	1.5	1.218472492
	Q2	1.8	1.653247444
	Q3	2.2	1.688171546
	Q4	2.2	1.716110828
2006	Q1	2.8	1.683741830
	Q2	2.8	2.503040414
	Q3	2.7	2.646662304
	Q4	1.7	1.965041266

**Závěr k bloku B**

Na základě získaných výsledků ekonometrického modelu se v případě tvaru regresní přímky a hyperboly nepotvrdila teorie původní Phillipsovy křivky. Tato teorie byla založena na jednoduším inverzním vztahu inflace a nezaměstnanosti. Oba modely měly nízkou úroveň koeficientu determinace, a proto jsou je třeba odmítnout jako neadekvátní a nepoužitelné pro predikci budoucí míry inflace. Potvrdilo se tedy, že ve zkomunátném období neexistoval jednoznačný vztah mezi inflací a nezaměstnaností (nepřímá úměrnost).

Fig. 23. Tenth page of Dr. Klimek's article

soutěž čtverců  $S_T^{(2)} = \sum(Y_T^{(2)} - \bar{y})^2 = 306.5876$  se 2 stupni volnosti charakterizuje variabilní vysvětlenou lineární regresní funkci se dvěma regresy. Přírůstek  $\Delta S_T = S_T^{(2)} - S_T^{(1)} = 146.241$ , s 1 stupněm volnosti představuje přírůstek očekávané inflace jako další proměnné k vysvětlení celkové variability inflace. Rozdíl mezi součtem čtverců  $S_{it} = \sum(y_t - \hat{y}_t^{(2)})^2 = 107.5714$  s  $(n - 3)$  stupni volnosti představuje nevyvětlenou část celkové variability.

Hodnota testového kritéria pro test hypotézy, že proměnná očekávaná inflace nepřispívá významně k vysvětlení celkové variability, je  $F = \Delta S_T / (S_{it} / (n - 3)) = 50.3$ . Kritická tabulková hodnota rozdělení  $F$  pro 1 a 37 stupňů volnosti a pro  $\alpha = 0.05$  je rovna  $F_{0,05}(1,37) = 4.1$ .

Poněvadž vyšlo, že  $F = 50.3 > F_{0,05}(1,37) = 4.1$ , zamítáme na hladině  $\alpha = 0.05$  hypotézu  $H_0$ . Očekávaná inflace tedy přinesla statisticky významné zlepšení vysvětlení schopnosti modelu oproti modelu klasické Phillipsovy křivky.

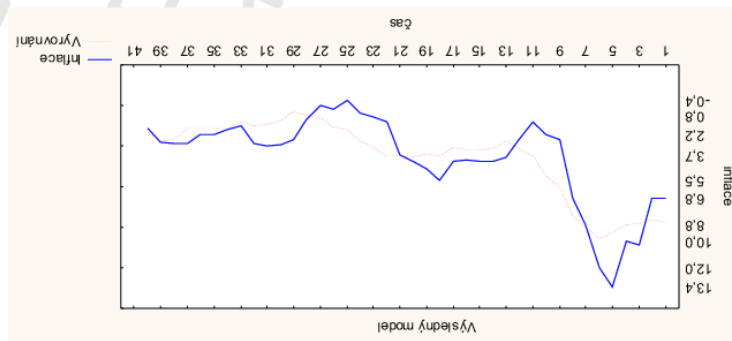
Leze tedy říci, že poslední model ve tvaru (7), zahrnující adaptivní inflační očekávání, může sloužit jako adekvátní model k vyjádření i k prognóze dynamického vztahu mezi inflací a nezaměstnaností v ČR v letech 1997-2006. Pro ilustraci vidíme na Obrázku 1 grafický průběh původních a vyrovnaných hodnot inflace vypočtených dle modelu (7).

Tabulka 11: Vyrovnané hodnoty

*M.S.E.* = 2.69

Rok	Kvartál	Inflace $i_t$	Vyrovnaní
1997	Q1	6.8	8.634022700
	Q2	6.8	8.474552175
	Q3	10.3	8.686918121
	Q4	10.0	8.804435827
	Q1	13.4	9.348510427
	Q2	12.0	9.858294254
1998	Q3	8.8	8.989836746
	Q4	6.8	8.121321312
	Q1	2.5	6.117653066
1999	Q2	2.2	5.164013729
	Q3	1.2	3.748107182
	Q4	2.5	3.225069758
2000	Q1	3.8	2.634922059
	Q2	4.1	3.172002100
	Q3	4.1	3.250830979

Fig. 22. Ninth page of Dr. Klimek's article



Obrázek 1: Výsledný model Phillipsovy křivky v ČR (10 let: 1997-2006, čtvrtletní údaje)

Zařazením další proměnné do modelu – očekávané inflace (jak navrhloval Phelps, nositel Nobelovy ceny za ekonomii v roce 2006) – jsme získali vyšší úroveň koeficientu determinace. Tento model splňoval podmínky verifikace ekonomické, statistické a rovněž ekonometrické. Podle sekvenčního F-testu přinesl neoklasický model významné zlepšení vysvětlení variability inflace oproti klasické Phillipsově křivce. Pokud bychom chtěli dosáhnout ještě větší přesnosti, tento model by musel obsahovat další proměnné, které ovlivňují hlavní zkomponovanou charakteristiku.

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 E-mail: klimek@fame.utb.cz

Fig. 24. Eleventh page of Dr. Klimek’s article

Fig. 25. Twelfth page of Dr. Klimek’s article

## 5.2 Making of publication cover

In the way of my practical part of bachelor work I've had another great opportunity: making the publications covers for Ing. Petr Klímek, Ph.D.<sup>17)</sup> and Ing. Martin Kovářík<sup>18)</sup>, from Informatics and Statistics Department of Tomas Bata University. These covers were made with possibilities of L<sup>A</sup>T<sub>E</sub>X system too. In this case I've used some support applications:

At first I have to mean the Corel Draw X4 application suite (trial version). The 'theme images' outputs were made in Corel Draw. Of course it could be possible to make the theme images in L<sup>A</sup>T<sub>E</sub>X but it wouldn't be so efficient. And because I've very good experience with this vector graphics editor, the choice was very easy.

The covers were made by conditions of package **PStricks**, and the output was the DVI file. For conversion to final PDF output I've used application called 'preloz' (it's MS Dos based application `preloz.bat`)<sup>19)</sup>.

The procedure of cover making was following:

- Designing the theme image in CorelDraw X4 application.
- Implementing the theme image (used themes images are attached in Appendix P VII) to the cover source code, which was strictly in the way of graphical form of cover. The last step was making the DVI output.
- Converting the DVI output to PDF format via `preloz.bat` application.
- The implementing of PDF output to the final version, where I've solved the positioning of cover as a whole graphical object. Then making of really final useable PDF output.

The source codes of the covers are included in Appendix P VIII and Appendix P IX. In Appendix P X you're able to see the photographs of these publications.<sup>20)</sup>

---

<sup>17)</sup> *Ekonomické aplikace statistiky a data miningu*. Martin Stríž Publishing, 2008. ISBN 978-80-87106-10-5

<sup>18)</sup> *Počítačové zpracování dat v programu MATLAB*. Martin Stríž Publishing, 2008. ISBN 978-80-87106-09-9

<sup>19)</sup> The application is downloadable from [http://www.agrospolvb.cz/paja/navody\\_pstricks.php](http://www.agrospolvb.cz/paja/navody_pstricks.php). All the syntax information are included on the sites.

<sup>20)</sup> The whole information, is available on the web site of publisher – Mr. Martin Stríž: <http://www.striz.cz/10klimek.php> (Dr. Klímek's publication) and <http://www.striz.cz/09matlab.php> (Ing. Kovářík's publication)





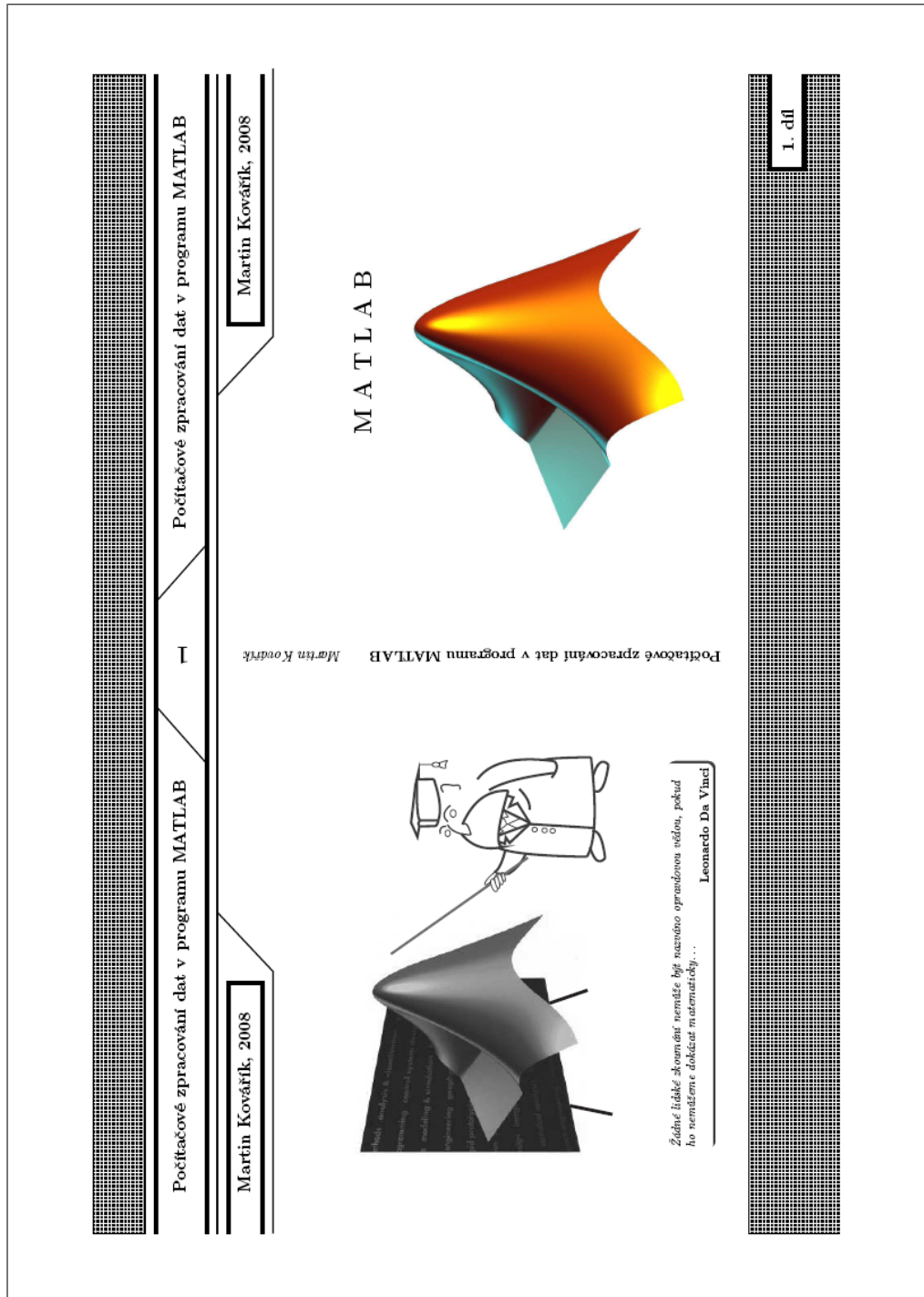


Fig. 27. Cover for Ing. Martin Kovářík's Matlab publication

## CONCLUSION

Author of this bachelor work wanted to mean quite non-traditional theme. But he believes, that this theme is interesting. Many of students use the study publications and they don't know how much work and time is hidden in each word of the pages. This bachelor work, especially it's practical work has shown me the depth of this meaning.

Primal objective of this project was suggesting L<sup>A</sup>T<sub>E</sub>X system as a right DTP tool for this works. I have written many advantages, and positive opinions. But now I have to say, the reality isn't without problems. For example the cover making. First step was making it in the digital way. The following printing by publisher realised the colour code problems. Yes, I have used standard coding, but the reality was little bit different. Printed colour seems different way. Of course solutions. What about the transparency and coloured paper?... Each way has it's troubles and I didn't want to say that I know the best one. The way I've suggested is cheap and doesn't require powerful hardware.

When I started to work on this project, I had many opinions and it was interesting to compare them with results of survey. I'm pleased that works on study materials have it's purpose, meaning and future. Important is, that students use the publications, and they mean this way efficient. By this project I got an idea. Idea of making template for these publications. Template which will give the unification and will be easy to realise and use. Basis for every publishable item. I think, it could be interesting way of university identity, the corporate identity. With high quality template it couldn't be difficult to use it by non-programmers. But it isn't only one subject for future. I'd like to improve the cover making conception. Implementing of optional object transparency, and rules for specific paperback or hardback should make this conception more efficient. In next a few months I'd like to attend actively the T<sub>E</sub>X conference called T<sub>E</sub>Xperience 2008. This conference is organized by Czechoslovak T<sub>E</sub>X Users Group and Faculty of Management and Economics Tomas Bata University in Zlín.

This bachelor work was written for basic understanding. In the way of showing, how easily effective could it be. Maybe someone will continue in this concept and will show the more advanced possibilities. What about the graphics like decorating frames on pages? What about using the wide scale of fonts? What about designing university own fonts? Maybe someone will improve the core of L<sup>A</sup>T<sub>E</sub>X and will bring revolutionary DTP system. The future is unsure, but brings many new possibilities in all the ways.

I'm pleased of tangible results of practical part of this project. Articles typesetting for Czech Statistical Society was great experience. And making the publication covers?

Great experience, great opportunity, great feeling to see it in reality. According to my opinion, the most efficient way of making publications is symbiosis. Symbiosis of student's (user's) need and maker's desire to show, teach or simply help.

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**LIST OF ABBREVIATIONS**

ATF	American Type Founders
CMYK	Cyan Magenta Yellow black (4-way color code)
CSS	Czech Statistical Society
DTP	Desktop Publishing
	Digitaly TyPography (mostly preferred by Dr. Pavel Stříž)
DVD	Digital Versatile Disc
DVI	DeVice Independent
FAQ	Frequently Asked Questions
GUI	Graphic User Interface
HTML	Hyper text Markup Language
HW	Hardware
IT	Information Technology
OO.org	OpenOffice.org
OS	Operating System
OSS	Open Source Software
MS	Microsoft
PC	Personal Computer
PS	PostScript
PDF	Portable Document Format
RGB	Red Green Blue (3-way color code)
SW	Software
WWW	World Wide Web
WYSIWYG	What You See Is What You get

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## APPENDIX P I. MICROSOFT OFFICE VERSIONS

Office 4.x editions

Standard	Professional
Word	Word
Excel	Excel
PowerPoint	PowerPoint
Mail	Mail
	Access

Office 95 editions

Standard	Professional
Word	Word
Excel	Excel
PowerPoint	PowerPoint
Schedule+	Schedule+
	Access

Office 97 and Office 97 Powered By Word 98 editions

Standard	Professional	Small Business	Developer
Word	Word	Word	Word
Excel	Excel	Excel	Excel
Outlook	Outlook	Outlook	Outlook
PowerPoint	PowerPoint		PowerPoint
	Access		Access
		Publisher	Developer Tools and SDK

Office 2000 editions

Standard	Small Business	Professional	Premium	Developer
Word	Word	Word	Word	Word
Excel	Excel	Excel	Excel	Excel
Outlook	Outlook	Outlook	Outlook	Outlook
PowerPoint		PowerPoint	PowerPoint	PowerPoint
	Publisher	Publisher	Publisher	Publisher
		Access	Access	Access
			FrontPage	FrontPage
			PhotoDraw	PhotoDraw
	Small Business Tools			Developer Tools and SDK

Office XP editions

<b>Standard</b>	<b>Professional</b>	<b>Professional with FrontPage</b>	<b>Professional Special Edition</b>	<b>Developer</b>
Word	Word	Word	Word	Word
Excel	Excel	Excel	Excel	Excel
Outlook	Outlook	Outlook	Outlook	Outlook
PowerPoint	PowerPoint	PowerPoint	PowerPoint	PowerPoint
	Access	Access	Access	Access
		FrontPage	FrontPage	FrontPage
			Publisher	Developer Tools and SDK
				SharePoint Team Services

Office 2003 editions

<b>Basic</b>	<b>Standard</b>	<b>Small Business</b>	<b>Professional Edition</b>	<b>Professional Enterprise Edition</b>
Word	Word	Word	Word	Word
Excel	Excel	Excel	Excel	Excel
Outlook	Outlook	Outlook with Business Contact Manager	Outlook with Business Contact Manager	Outlook with Business Contact Manager
	PowerPoint	PowerPoint	PowerPoint	PowerPoint
		Publisher	Publisher	Publisher
			Access	Access
				InfoPath

Office 2007 editions

Basic	Home and Student	Standard	Small Business	Professional	Ultimate	Professional Plus	Enterprise
Word	Word	Word	Word	Word	Word	Word	Word
Excel	Excel	Excel	Excel	Excel	Excel	Excel	Excel
	PowerPoint	PowerPoint	PowerPoint	PowerPoint	PowerPoint	PowerPoint	PowerPoint
Outlook		Outlook	Outlook	Outlook	Outlook	Outlook	Outlook
			Accounting Express	Accounting Express	Accounting Express	Accounting Express	
			Publisher	Publisher	Publisher	Publisher	Publisher
				Access	Access	Access	Access
					InfoPath	InfoPath	InfoPath
					Groove		Groove
	OneNote				OneNote		OneNote
						Communicator	Communicator

Prior editions for Mac OS & Mac OS X

Package Name	Applications and comments	Release Date
Office 1	Word 3, etc.	1990
Office 2	Word 4, etc.	1992
Office 3	Word 5, Excel 4, PowerPoint 3, etc.	1993
Office 4.2	Word 6, Excel 5, PowerPoint 4, etc.	1994
Office 4.2.1	Word 6, Excel 5, PowerPoint 4, etc. (first release designed for the PPC, final release for 68K)	1994
Office 98 (8.0)	Word/Excel/PowerPoint 98	March 15, 1998
Office 2001 (9.0)	Word/Excel/PowerPoint and Entourage 2001 (final release for Mac OS 9)	October 11, 2000
Office (10.0/X)	Word/Excel/PowerPoint/Entourage X (first release for Mac OS X, latest update 10.1.9)	November 19, 2001
Office 2004 (11.0)	Word/Excel/PowerPoint/Entourage 2004 (latest update 11.4.0)	February 12, 2004
Office 2008 (12.0)	Word/Excel/PowerPoint/Entourage 2008 (the first release that runs natively on both PPC and Intel without the use of the Rosetta emulation layer, latest update 12.0.0)	January 15, 2008

## APPENDIX P II. DTP SYSTEMS

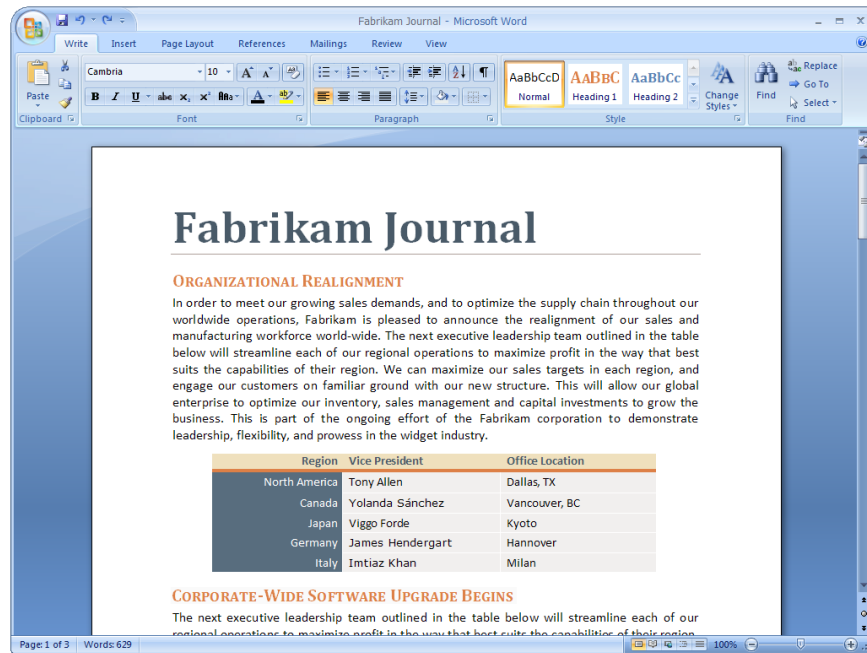


Fig. 28. MS Word 2007 screenshot

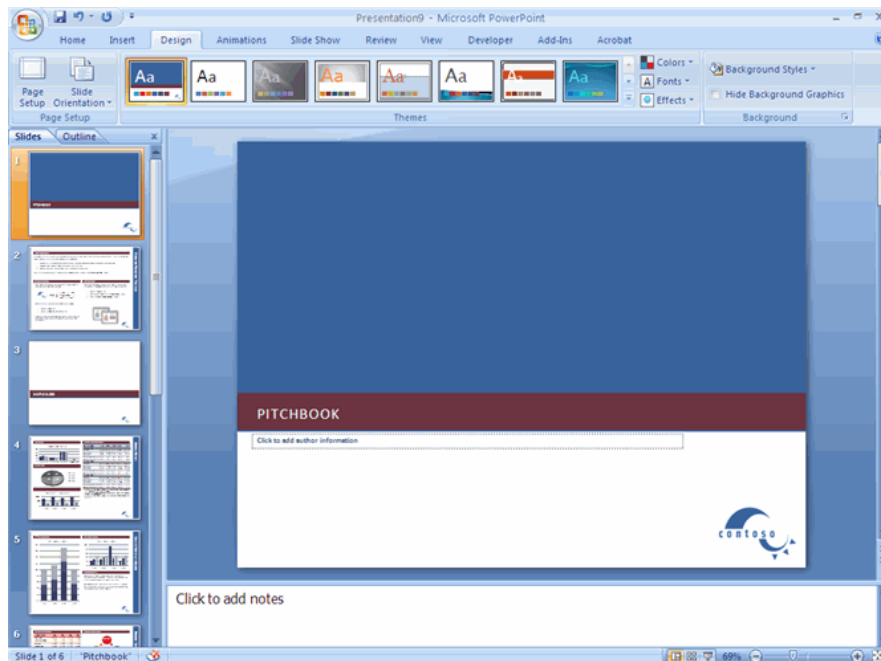


Fig. 29. MS PowerPoint 2007 screenshot





Fig. 30. MS Publisher 2007 screenshot

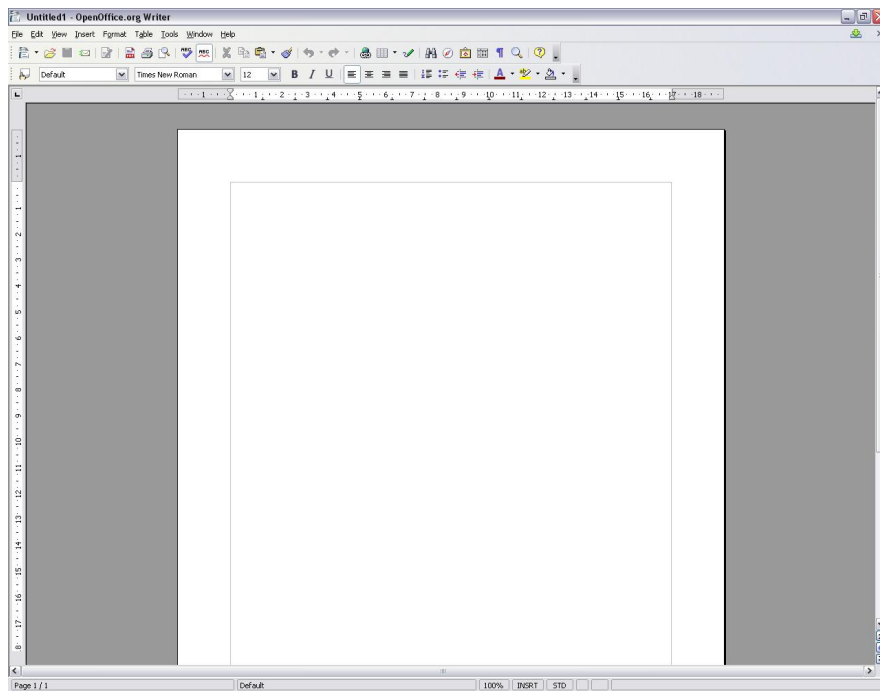


Fig. 31. OpenOffice.org Writer screenshot



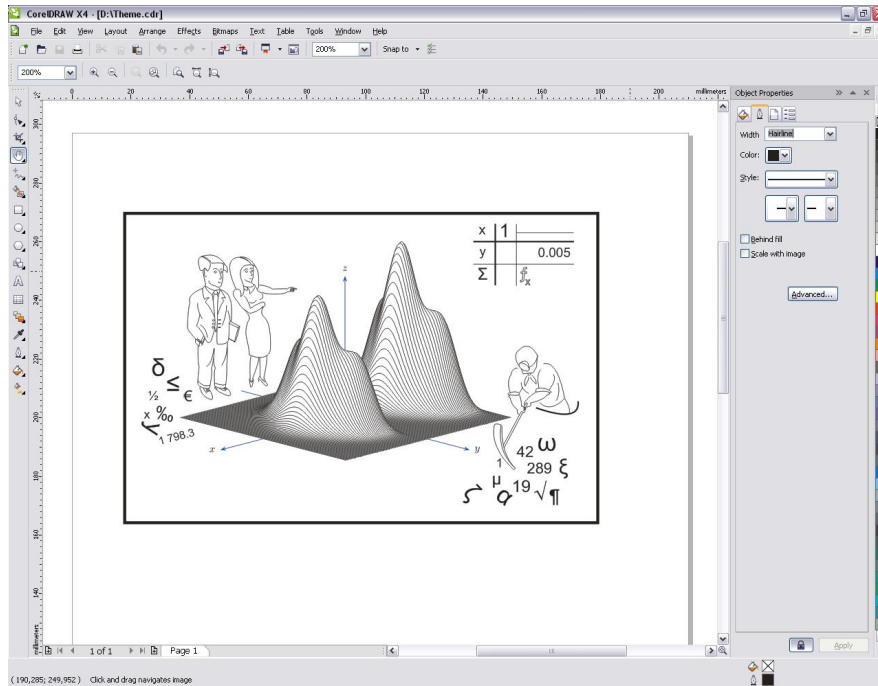


Fig. 34. Corel Draw X4 screenshot

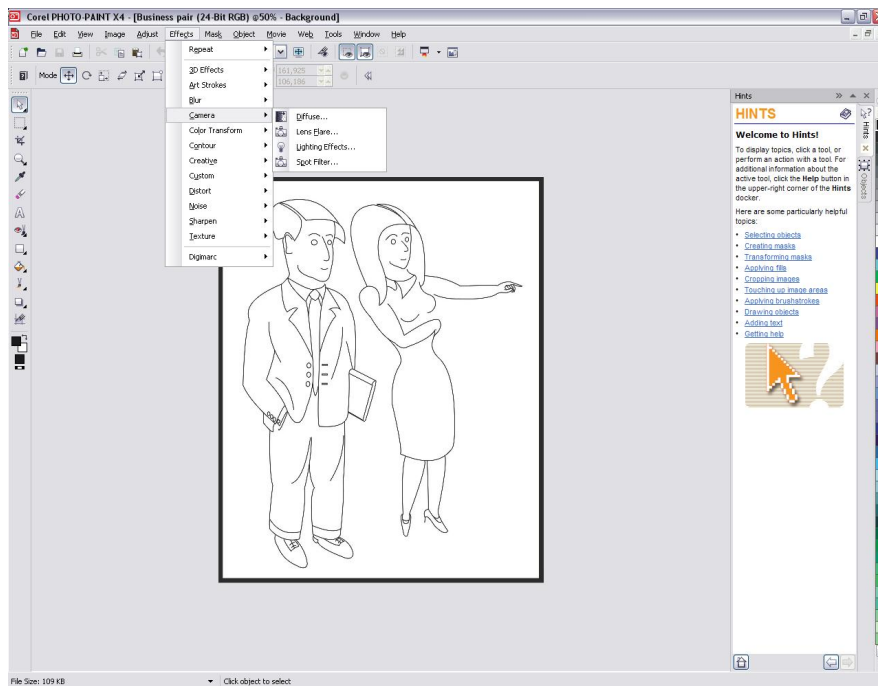


Fig. 35. Photo Paint X4 screenshot

## APPENDIX P III. INSTALLING MIKTEX

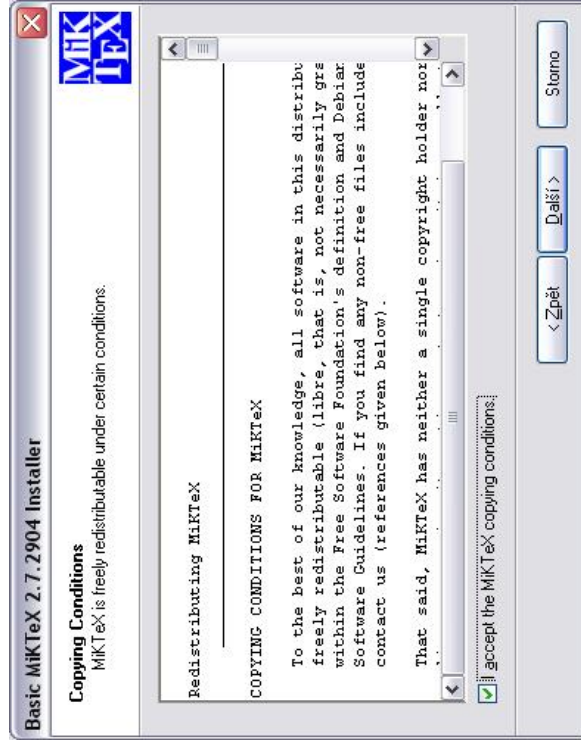


Fig. 36. MikTeX installation screenshot

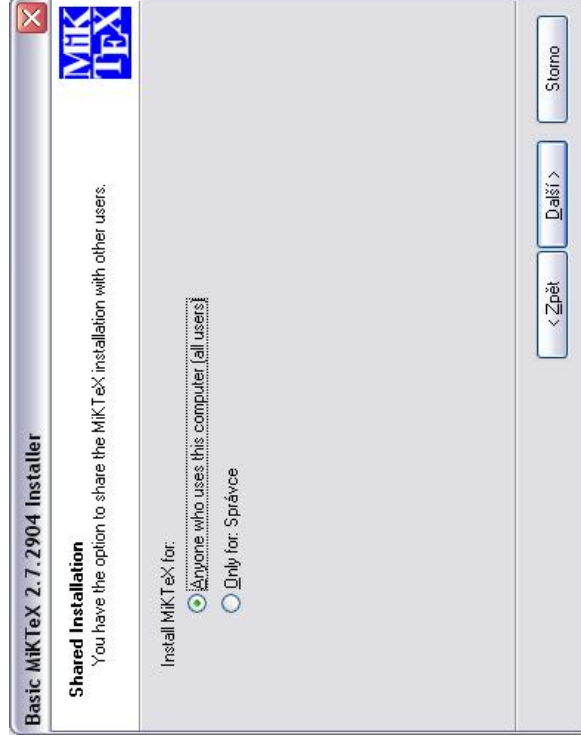


Fig. 37. MikTeX installation screenshot

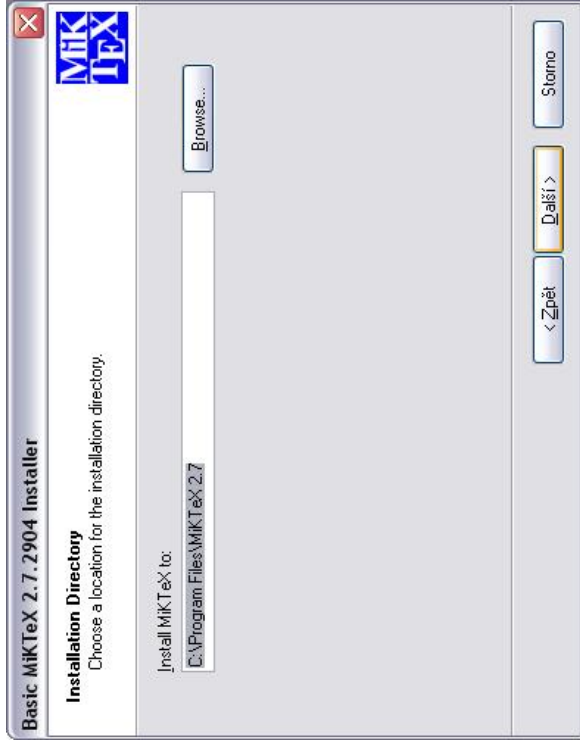


Fig. 38. MikTeX installation screenshot



Fig. 39. MikTeX installation screenshot

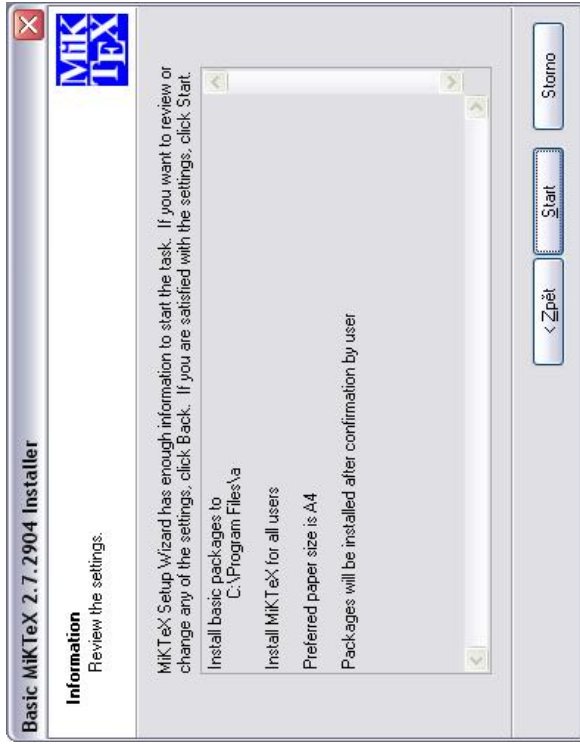


Fig. 40. MikTeX installation screenshot

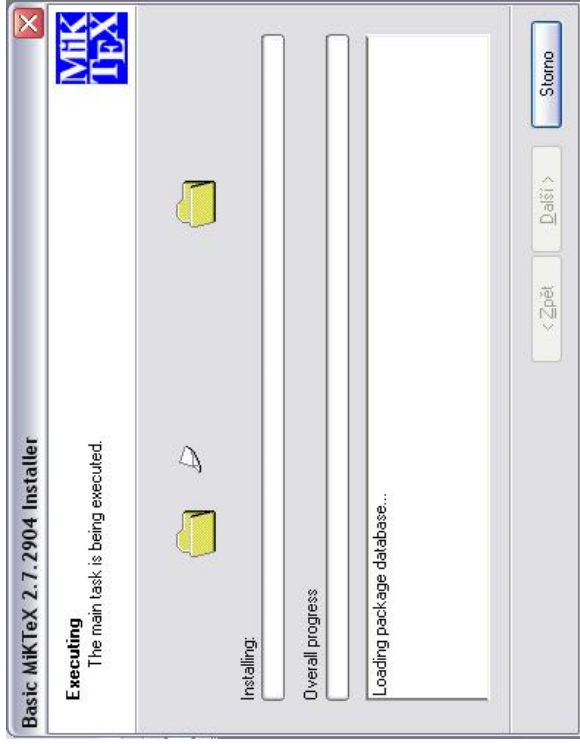


Fig. 41. MikTeX installation screenshot



Fig. 42. MikTeX installation screenshot

## APPENDIX P IV. MIKTeX CONFIGURATION

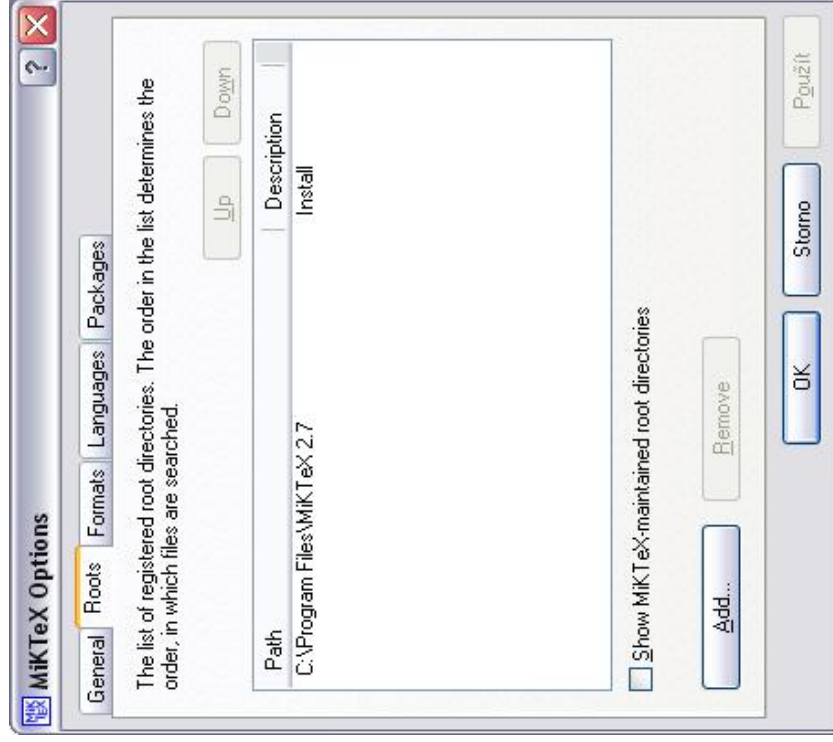


Fig. 43. MikTeX setting – Roots card

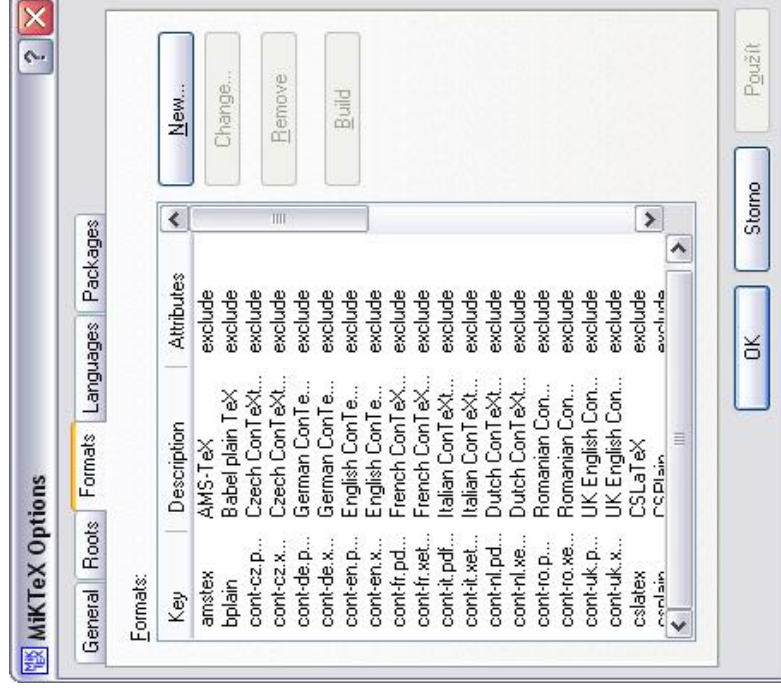


Fig. 44. MikTeX setting – Formats card



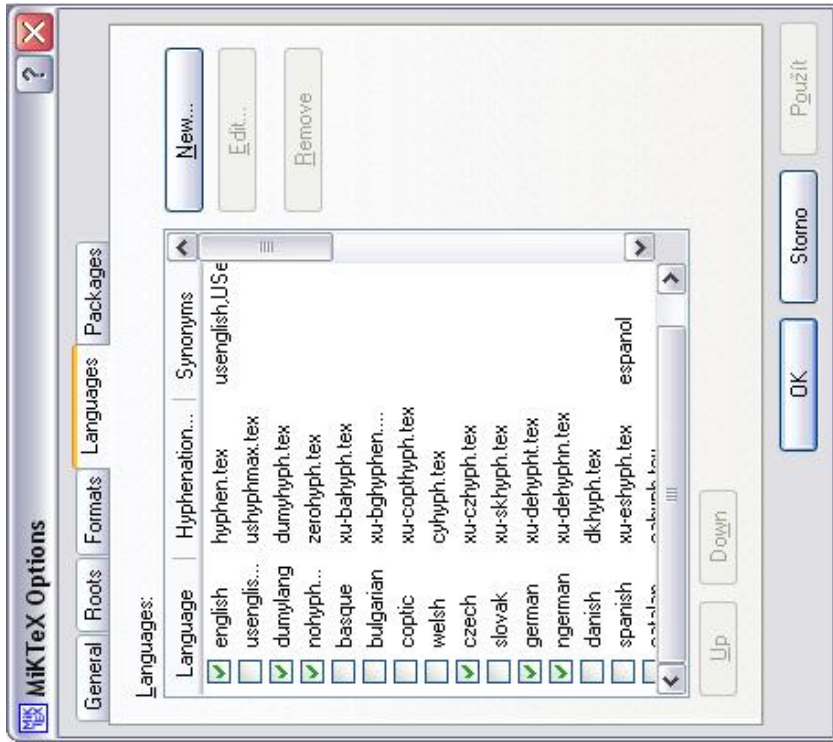


Fig. 45. MikTeX setting – Languages card

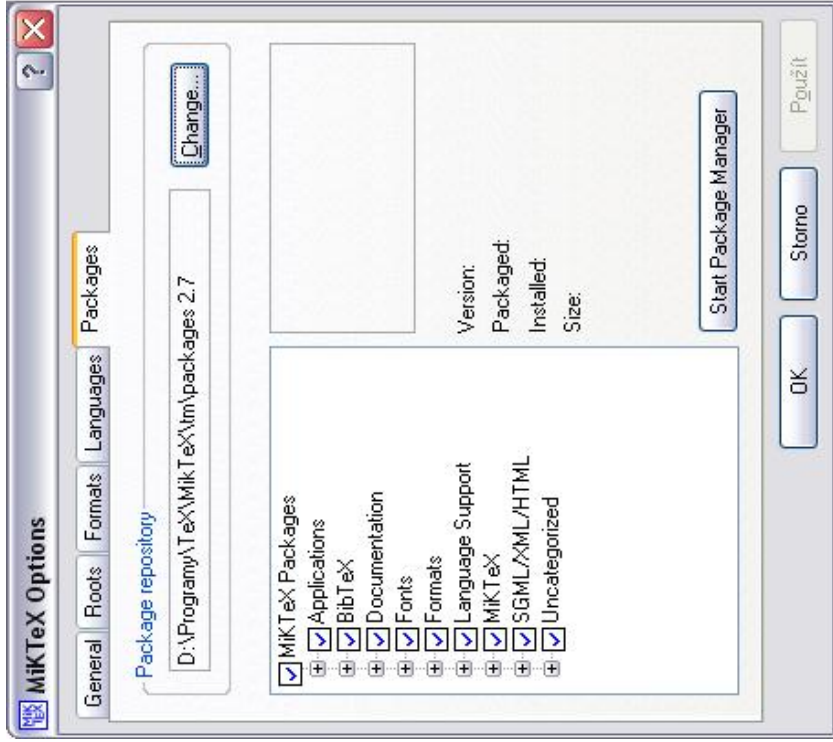


Fig. 46. MikTeX setting – Packages card

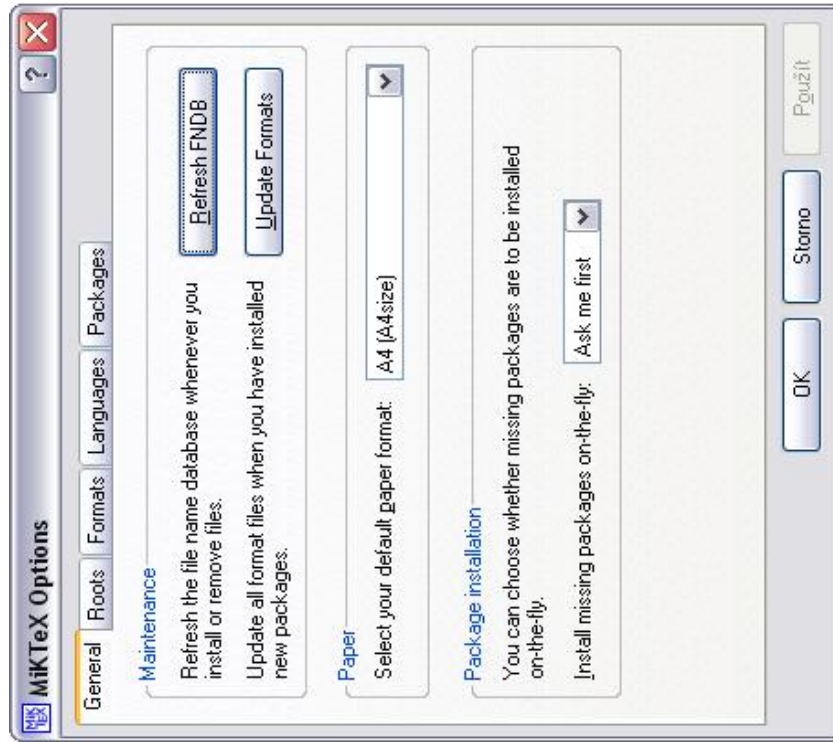


Fig. 47. MikTeX setting – General card

APPENDIX P V. CZECH STATISTICAL SOCIETY L<sup>A</sup>T<sub>E</sub>X TEMPLATE (STYLE TEMPLATE)

```

%% csts.sty
%%
%% Sablona pro Bulletin Ceské statistické společnosti
%% Stylefile for Bulletin of the Czech Statistical Society
%%
%% 10-03-2005 created by JA
%% Pouzivane zrcadlo v Bulletinu od roku 2005 | Used mirror in Bulletin from the year 2005
% Nastaveni zakladnich rozměru | Setting basic margins
\setlength{\oddsidemargin}{ 0mm}
\setlength{\evensidemargin}{ 0mm}
\setlength{\topmargin}{ 0mm}
% Delka zrcadla | Width of text in mirror
\setlength{\textwidth}{ 117mm}
% Vyska zrcadla | Height of text in mirror
\setlength{\textheight}{ 168mm}
%Mastaveni delky pretečení | Setting length of overfull
\overfullrule1pt
%Predefinovani stylu nazvu prispěvku | Redefining format of the title of the paper.
\renewcommand{\title}[1]{
\noindent
\Large\textbf{\uppercase{#1}}
\medskip
}
\let\nazev\title
%Predefinovani stylu autoru | Redefining format of the authors of the paper.
\renewcommand{\author}[1]{
\medskip\noindent
\normalize
{\Large\textbf{#1}}
\smallskip
}
\let\authors\author
\let\autor\author
\let\autori\author
%%Spolecne prvky pro vsechny clanky | Common elements for all articles
\newcommand{\Zapomen}[1]{

```

```

\newcommand{\Email} [1]{\noindent\textit{E-mail}: \texttt{#1}}
\newcommand{\KlicovaSlova}[1]{\medskip\noindent\textit{Klíčová slova words}: #1.}
\newcommand{\Abstrakt}[1]{\bigskip\noindent\textbf{Abstrakt}}: #1}
\newcommand{\Adresa}[1]{\noindent\textit{Adresa}: #1\smallskip}
\newcommand{\Podkovani}[1]{\noindent\textit{Poděkování}: #1\smallskip}
\renewcommand\refname{Literatura}
%Definovani registracni znacky | Defining registration mark symbol
\DeclareTextCommandDefault{\registered}{\textcircled{\small\scshape R}}
%%% APPEARANCE OF SECTIONS REDEFINED
% Styl sekce | Style of section.
\makeatletter
\renewcommand\section{\@startsection
{1}%
{0mm}%
{-\baselineskip}%
{.5\baselineskip}%
{\normalfont\large\bfseries}}%
}%
\makeatother
% Format sekce | Format of section
\makeatletter
\renewcommand \thesection {\@arabic\c@section.}
\makeatother
\def\secke#1{\section{#1}
\noindent
}
% Styl podsekce | Style of subsection.
\makeatletter
\renewcommand\subsection{\@startsection
{subsection}%
{2}%
{0mm}%
{-\baselineskip}%
{0.5\baselineskip}%
{\normalfont\large\bfseries}}%
}%
\makeatother
% Format podsekce | Format of subsection

```

```

\makeatletter
\renewcommand\thesubsection   {\thesection\@arabic\c@subsection.}
\makeatother
%Zapasovani \noindent | Including \noindent
\def\podsekce#1{\subsection{#1}}
\noindent
}
% Styl podpodsekce | Style of subsection.
\makeatletter
\renewcommand\subsection{\@startsection
{3}{%
{0mm}{%
{-\baselineskip}%
{-0.5\baselineskip}%
{\normalfont\normalsize\bfseries}%
}}%
\makeatother
% Format podpodsekce | Format of subsection
\makeatletter
\renewcommand\thesubsubsection{\thesubsection\@arabic\c@subsubsection.}
\makeatother
\def\podpodsekce#1{\subsection{#1}}
%% %% UNDERPRINT
% Vodotisk | Watermark
\special{! userdict begin /bop-hook{
gsave 100 280 translate 65 rotate
/cmbx12 findfont 180 scalefont setfont 0 0 moveto
0.9 setgray (BULL) show grestore
gsave 250 300 translate 65 rotate
/cmbx12 findfont 180 scalefont setfont 0 0 moveto
0.9 setgray (DRAFT) show grestore}
def end}
% END OF CSTS.STY

```

## APPENDIX P VI. ING. PETR KLÍMEK, PH.D. – CZECH STATISTICAL SOCIETY ARTICLE

```
\documentclass[a4paper,10pt,dvips]{article}
\usepackage{czech}
%\usepackage[colorlinks=true, citecolor=blue]{hyperref}
%Pro uživatele MS Windows.
\usepackage[cp1250]{inputenc}
\usepackage{csts}
\usepackage[dvipdfm]{graphicx}
\usepackage{epsf}
\usepackage{epsfig}
\usepackage{amssymb}
\usepackage[centertags]{amsmath}
\usepackage{amsfonts}
\usepackage{amsthm}
\usepackage{bm}
\usepackage{color}
\usepackage{indentfirst}
\usepackage{latexsym}
\usepackage{longtable}
\usepackage{marvosym}
\usepackage{multirow}
\usepackage{rotate}
\usepackage[verbose]{wrapfig}
\newtheorem{thm}{Theorem}[section]
\newtheorem{theorem}{Theorem}[section]
\newtheorem{defi}{Definition}[section]
\newtheorem{theo}{Theorem}[section]
\newtheorem{algo}{Algorithm}[section]
\newtheorem{pro}{Proposition}[section]
\newtheorem{defn}{Definition}[section]
\newtheorem{lemma}{Lemma}[section]
\newtheorem{problem}{Problem}[section]
\newtheorem{remark}{Remark}[section]
\newtheorem{corol}{Corollary}[section]
\newtheorem{proposition}{Proposition}[section]
\newtheorem{definition}{Definition}[section]
\overfullrule0pt
%%\usepackage{graphics}
\usepackage{graphicx}
\DeclareGraphicsExtensions{.eps,.ps}
%Zde je prostor na použití dalších balíčků.
\usepackage{dcolumn}
\usepackage{afterpage}
\usepackage{lscap}
\begin{document}
\nazev{Phillipsova křivka v ČR}
\author{Petr Klímek}
\Abstrakt{Phillipsova křivka (vztah mezi mírou inflace (mzdové nebo
cenové)
a mírou nezaměstnanosti) patří bezesporu mezi kontroverzní pojmy
ekonomické
teorie. Její aplikace jsou značně široké, nicméně konkrétní specifikace
Phillipsovy
křivky je poplatná teorii mezd a cen, z které se při její konstrukci vychází.
Cílem
následujícího článku je empiricky ověřit na reálných datech za českou
ekonomiku
v letech 1997-2006, do jaké míry lze anticipovat současný vývoj vztahu
inflace
a nezaměstnanosti v ČR pomocí variantně specifikovaných rovnic
Phillipsovy
křivky, vycházejících především z keynesiánského a později
z neoklasického
pojetí.}
\KlicovaSlova{inflace, nezaměstnanost, očekávání, Phillipsova křivka}
\sekce{Klasická Phillipsova křivka}V roce 1958 popsal A.W. Phillips
dlouhodobou
závislost mezi mírou nezaměstnanosti a relativní změnou nominálních
mezd ve
```

Velké Británii za léta 1861-1957, což byl důležitý mezník ve vývoji keynesiánské ekonomie. Původní nepřímá závislost mzdové inflace a změny relativní nezaměstnanosti byla v pozdějších aplikacích Phillipsovy křivky nejčastěji modifikována na nepřímý lineární vztah mezi tempem celkové inflace a změnou míry nezaměstnanosti, jinak řečeno se předpokládalo, že platí:

$$\Delta P/P = f(U)$$

Phillipsova křivka vycházela z úvahy, že klesající míra nezaměstnanosti zvyšuje, při ostatních podmínkách neměnných, míru inflace, přičemž nulová úroveň míry nezaměstnanosti je teoreticky konzistentní s nekonečnou úrovní inflace. Jejími charakteristickými rysy jsou podle [3]:

- záporná směrnice,
- přibližně hyperbolický tvar,
- průsečík s horizontální osou v bodě  $U^N$ , představujícím tzv. přirozenou míru nezaměstnanosti.

Bohužel v průběhu 70. let minulého století tento model v důsledku stagflace ekonomiky selhal a neodpovídal původní Phillipsově křivce. Bylo zřejmé, že vztah mezi inflací a nezaměstnaností je složitější.

M. Friedman a E. Phelps v roce 1967 zásadně ovlivnili další vývoj Phillipsovy teorie, když upozornili na to, že Phillipsova křivka opomíjí vliv očekávané inflace. Výsledkem zkoumání těchto evidentních rozporů mezi původní specifikací Phillipsovy křivky a ekonomickou realitou byla tedy její neoklasická modifikace. V jejích pojetí má rovnice dlouhodobé Phillipsovy křivky tvar

$$\Delta P/P = \pi_t - k(U_t - U^N), \quad t=1,2,\dots,T,$$

kde  $\pi_t = \pi^e_t$  je očekávaná míra inflace a  $k$  je koeficient efektu rozdílu skutečné a přirozené míry nezaměstnanosti na inflaci [1].

Z výše uvedeného vidíme, že podstatný vliv na průběh Phillipsovy křivky ve tvaru (b) má zvolený způsob inflačních očekávání. Jak tato očekávání určit? Existují dvě základní pojetí očekávané inflace. První z nich tvrdí, že očekávání jsou adaptivní (zakládají se na dřívějším vývoji inflace). Druhou možností je přístup racionálních očekávání, který říká, že se lidé při svých očekáváních nedopouštějí systematických chyb. V našem článku zvolíme pro jednoduchost první možnost. Pokud vyjádříme očekávanou inflaci pomocí adaptivních očekávání, dostáváme podle [2] následující rovnici (c):

$$\pi^e_t - \pi^e_{t-1} = g(\pi_t - \pi^e_{t-1}), \quad 0 < g \leq 1.$$

Rovnice (c) popisuje proces učení, takže podle (c) adaptivní očekávání ( $g$  je koeficient adaptace), týkající se odhadu míry inflace, je upraveno na základě zkušenosti v každém období o část rozdílu mezi skutečnou inflací v období  $t$  a její očekávanou mírou v předchozím období, neboli (c) lze přepsat do tvaru (d) pro lepší možnost výpočtu.

```

\begin{displaymath}
\pi^e_t = g\pi_t + (1-g)\pi^e_{t-1}, \quad 0 < g \leq 1.
\end{displaymath}
\sekce{Odhad Phillipsových křivek pro Českou republiku}Variantní
specifikace
Phillipsových křivek nyní ověříme na reálných datech za českou ekonomiku
v období 1. čtvrtletí 1997 až 4. čtvrtletí 2006. Máme tedy celkem
k dispozici 40
pozorování. Čtvrtletní časové řady o procentní míře inflace
a nezaměstnanosti v ČR
byly vypočteny z údajů ČSÚ. Data a pomocné výpočty jsou uvedeny
v následující
tabulce. Nejprve se budeme zabývat Phillipsovou křivkou v klasickém
keynesiánském pojetí. Vstupní údaje jsou v Tabulce 1.
\noindent
\textbf{Data pro výpočet Phillipsovy křivky} - vztah mezi inflací
a nezaměstnaností
\newcolumnntype{d}{D{,}{,}{12}}
\newcolumnntype{e}{D{,}{,}{4}}
\newcolumnntype{f}{D{,}{,}{8}}
\begin{longtable}{|c|c|e|f|d|}
\caption{\hspace{7cm}($n=40$)}
\hline
(1) & (2) & \multicolumn{1}{c|}{(3)} & \multicolumn{1}{c|}{(4)} &
\multicolumn{1}{c|}{(5)}
\hline
Rok & Kvartál & \multicolumn{1}{c|}{Inflace $\pi_t$} & &
\multicolumn{1}{c|}{Nezaměstnanost $U_t$} & &
\multicolumn{1}{c|}{Očekávaná
inflace $\pi^e_t$}
\endfirsthead
\caption{Pokračování \hspace{5cm}($n=40$)}
\endhead
\hline
1997 & Q1 & 6,8 & 4,3 & 6,800000000
\hline
& Q2 & 6,8 & 4,5 & 6,800000000
\hline
& Q3 & 10,3 & 5,0 & 7,850000000
\hline
& Q4 & 10,0 & 5,4 & 7,850000000
\hline
1998 & Q1 & 13,4 & 5,9 & 8,495000000
\hline
& Q2 & 12,0 & 5,9 & 9,966500000
\hline
& Q3 & 8,8 & 6,8 & 10,576650000
\hline
& Q4 & 6,8 & 7,3 & 10,043585000
\hline
1999 & Q1 & 2,5 & 8,4 & 9,070509500
\hline
& Q2 & 2,2 & 8,4 & 7,099356650
\hline
& Q3 & 1,2 & 9,0 & 5,629549655
\hline
& Q4 & 2,5 & 9,0 & 4,300684759
\hline
2000 & Q1 & 3,8 & 9,5 & 3,760479331
\hline
& Q2 & 4,1 & 8,7 & 3,870634872
\hline
& Q3 & 4,1 & 8,5 & 3,939444411
\hline
& Q4 & 4,0 & 8,3 & 3,957611087
\hline
2001 & Q1 & 4,1 & 8,5 & 4,000327761
\hline
& Q2 & 5,5 & 8,0 & 4,450229433
\hline
& Q3 & 4,7 & 8,2 & 4,525160603
\hline
& Q4 & 4,1 & 7,8 & 4,397612422
\hline
2002 & Q1 & 3,7 & 7,7 & 4,188328695

```



```

\hline
& Q2 & 1,2 & 7,0 & 3,291830087\\
\hline
& Q3 & 0,8 & 7,2 & 2,544281061\\
\hline
& Q4 & 0,6 & 7,3 & 1,960996743\\
\hline
2003 & Q1 & -0,4 & 7,6 & 1,252697720\\
\hline
& Q2 & 0,3 & 7,5 & 0,966888404\\
\hline
& Q3 & 0,0 & 8,0 & 0,676821883\\
\hline
& Q4 & 1,0 & 8,1 & 0,773775318\\
\hline
2004 & Q1 & 2,5 & 8,7 & 1,291642723\\
\hline
& Q2 & 2,9 & 8,2 & 1,774149906\\
\hline
& Q3 & 3,0 & 8,2 & 2,141904934\\
\hline
& Q4 & 2,8 & 8,2 & 2,339333454\\
\hline
2005 & Q1 & 1,5 & 8,4 & 2,087533418\\
\hline
& Q2 & 1,8 & 7,8 & 2,001273392\\
\hline
& Q3 & 2,2 & 7,8 & 2,039966081\\
\hline
& Q4 & 2,2 & 7,8 & 2,071972865\\
\hline
2006 & Q1 & 2,8 & 8,0 & 2,217578292\\
\hline
& Q2 & 2,8 & 7,1 & 2,334062634\\
\hline
& Q3 & 2,7 & 7,0 & 2,407250107\\
\hline
& Q4 & 1,7 & 7,7 & 2,265800085\\
\hline
\end{longtable}
\begin{flushright}
[Zdroj: upraveno podle dat ČSÚ]
\end{flushright}
\section*{A. Klasický model \normalfont{- keynesiánský (krátkodobá
Phillipsova
křivka)}}\noindent Pro výpočet regresního modelu využijeme MS Excelu
modul
Analýza dat. Odhadujeme neznámé parametry rovnice (1)
\begin{equation}
\pi_t = \beta_0 + \beta_1 u_t; \quad \beta_0 < 0
\end{equation}
\noindent
Po zadání údajů získáme v tabulkách 2, 3 a 4 následující výsledky.
\afterpage{
\landscape
\begin{table}
%\noindent\textbf{Tabulka 2a} - Výsledek (regresní přímka)\\
\caption{Výsledek (regresní přímka)\hspace{15cm}}
\begin{tabular}{|l c|}
\hline
\multicolumn{2}{|c|}{\textbf{Regresní statistika}}\\
\hline
Násobné R$ & 0,621030389\\
Hodnota spolehlivosti R$ & 0,385678744\\
Nastavená hodnota spolehlivosti R$ & 0,369512395\\
Chyba stř. hodnoty & 2,584428858\\
Pozorování & 40\\
\hline
\end{tabular}
\end{table}
\begin{table}
%\noindent\textbf{Tabulka 2b} - Celkový test\\
\caption{Výsledek (Celkový test)\hspace{15cm}}
\newcolumnntype{g}{D{,}{,}{4}}

```

```

\newcolumnntype{h}{D{,}{,}{6}}
\begin{tabular}{|l c g h c c|}
\hline
\textbf{ANOVA} & & & & & \\
\hline
& \textit{Stupně volnosti} & \textit{SS} & & & \\
\multicolumn{1}{c}{\textit{MS}} & & & & & \\
\multicolumn{1}{c}{\textit{F}} & & \textit{Významnost F} & & & \\
\hline
Regrese & 1 & 159,3466 & 159,346600 & 23,85688618 & 1,9041E-05 \\
Rezidua & 38 & 253,8124 & 6,679273 & & \\
Celkem & 39 & 413,1590 & & & \\
\hline
\end{tabular}
\end{table}
\begin{table}
%noindent\textbf{Tabulka 2c} - Dílčí testy \\
\caption{Výsledek (Dílčí testy)\hspace{15cm}}
\newcolumnntype{i}{D{,}{,}{7}}
\newcolumnntype{j}{D{,}{,}{9}}
\newcolumnntype{k}{D{,}{,}{8}}
\newcolumnntype{h}{D{,}{,}{10}}
\newcolumnntype{m}{D{,}{,}{9}}
\begin{tabular}{|l j c k h m i|}
\hline
& \multicolumn{1}{c}{\textit{Koeficienty}} & & \textit{Chyba stř. hodnoty} & & \\
& & \multicolumn{1}{c}{\textit{\$t\$ stat}} & & \multicolumn{1}{c}{\textit{Hodnota \$P\$}} & \\
& & \multicolumn{1}{c}{\textit{Dolní 95\%}} & & \multicolumn{1}{c}{\textit{Horní 95\%}} & \\
\hline
Hranice & 16,595730720 & 2,642316 & 6,280752 & 2,34679E-07 & \\
11,24664170 & & & & & \\
21,94482 \\
Soubor X 1 & -1,684933032 & 0,344966 & -4,88435 & 1,9041E-05 & - \\
2,38327937 & & & & & \\
& -0,98659 \\
\hline
\end{tabular}
\end{table}
\endlandscape
}
\eject
\noindent
Rovnice lineárního modelu potom je:
\begin{equation}
\hat{\pi}_t = 16,596 - 1,685U_t; R^2 = 0,386.
\end{equation}
\noindent
Znaménka parametrů jsou sice v pořádku (souladu s modelem (1)), ovšem hodnota koeficientu determinace (Hodnota spolehlivosti  $R^2$ ) je velmi nízká. Zkusíme tedy další model - regresní hyperbolu. Tato je vyjádřena rovnicí (3):
\begin{equation}
\pi_t = \beta_0 + \beta_1 U^{-1}_t; \beta_0 < 0, \beta_1 > 0.
\end{equation}
\noindent
Výsledky získáme z tabulek 5, 6, 7.
\afterpage{
\landscape
\begin{table}
%noindent\textbf{Tabulka 3a} - Výsledek (regresní hyperbola) \\
\caption{Výsledek (regresní hyperbola)\hspace{15cm}}
\begin{tabular}{|l c|}
\hline
\multicolumn{2}{|c|}{\textbf{Regresní statistika}} \\
\hline
Násobné  $R^2$  & 0,615498 \\
Hodnota spolehlivosti  $R^2$  & 0,378838 \\
Nastavená hodnota spolehlivosti  $R^2$  & 0,362491 \\

```

```

Chyba stř. hodnoty & 2,598779\\
Pozorování & 40\\
\hline
\end{tabular}
\end{table}
\begin{table}
%\noindent\textbf{Tabulka 3b} - Celkový test\\
\caption{Celkový test\hspace{15cm}}
\newcolumnntype{n}{D{,}{,}{4}}
\newcolumnntype{o}{D{,}{,}{6}}
\begin{tabular}{|l c n o c c|}
\hline
\textbf{ANOVA} & & & & \\
\hline
& \textit{Stupně volnosti} & \textit{SS} & & \\
\multicolumn{1}{c}{\textit{MS}} & & & & \\
\multicolumn{1}{c}{\textit{F}} & & \textit{Významnost F} & & \\
\hline
Regrese & 1 & 156,5202 & 156,520200 & 23,1756308 & 2,3688E-05\\
Rezidua & 38 & 256,6388 & 6,753653 & & \\
Celkem & 39 & 413,1590 & & & \\
\hline
\end{tabular}
\end{table}
\begin{table}
%\noindent\textbf{Tabulka 3c} - Dílčí testy\\
\caption{Dílčí testy\hspace{15cm}}
\newcolumnntype{p}{D{,}{,}{6}}
\newcolumnntype{q}{D{,}{,}{8}}
\newcolumnntype{s}{D{,}{,}{9}}
\newcolumnntype{t}{D{,}{,}{8}}
\newcolumnntype{u}{D{,}{,}{6}}
\begin{tabular}{|l p c q s t u|}
\hline
& \multicolumn{1}{c}{\textit{Koeficienty}} & & \textit{Chyba stř. hodnoty} & & \\
& & \multicolumn{1}{c}{\textit{t stat}} & & & \\
& & \multicolumn{1}{c}{\textit{Hodnota } P} & & & \\
& & \multicolumn{1}{c}{\textit{Dolní 95\%}} & & & \\
& & \multicolumn{1}{c}{\textit{Horní 95\%}} & & & \\
\hline
Hranice & -5,66216 & 2,017149 & -2,807010 & 0,00784658 & -9,74566274 & -1,57865\\
Soubor X 1 & 69,65650 & 14,469240 & 4,814107 & 2,3688E-05 & 40,36504400 & 98,94796\\
\hline
\end{tabular}
\end{table}
\endlandscape
}
\eject
\noindent
Potom rovnice regresní hyperboly má tvar:
\begin{equation}
\hat{\pi}_t = -5,662 + 69,6575U_t^{-1}; R^2 = 0,379.
\end{equation}
\subsection*{Závěr:}
\noindent Z výsledků je patrné (nízké hodnoty  $R^2$ ), že bude potřeba pro daná data opustit keynesiánský model a zahrnout další proměnnou do modelu - očekávanou inflaci  $\pi^e_t$ .
\section*{B. Neoklasický model \normalfont{- Friedmanův: Vliv očekávané inflace (dlouhodobá Phillipsova křivka)}}
\noindent Nyní zahrneme novou proměnnou do našeho modelu; bude to očekávaná inflace
\begin{equation}
\pi_t = \beta_0 + \beta_1 U_t + \beta_2 \pi^e_t; \beta_0 < 0, \beta_1 > 0
\end{equation}
\noindent

```

K výpočtu očekávané inflace použijeme vztah (d). Otázkou zůstává, jaký zvolit koeficient adaptace  $\beta$ . V devadesátých letech se jeho hodnota pohybovala kolem hodnoty 0,8. Avšak pro ekonomiku v posledních letech klesla míra koeficientu adaptace díky stabilizaci ekonomiky až na hodnotu 0,2. Pro její výpočet tedy použijeme vztahu (adaptační vztah podle vztahu(d)):

$$\pi^e_t = 0,2\pi_t + 0,8\pi^e_{t-1}.$$

Pro náš příklad máme vypočteny hodnoty očekávané inflace podle (6) ve sloupci (5) tabulky 1. Nyní využijeme opět stejný modul v Excelu, s tím rozdílem, že budeme mít nyní dvě nezávisle proměnné. Tabulky 8, 9 a 10 nám poskytnou úplné výsledky.

```

\afterpage{
\landscape
\begin{table}
%\noindent\textbf{Tabulka 4a} - Výsledek (regresní rovina)\
\caption{Výsledek (regresní rovina)\hspace{15cm}}
\begin{tabular}{|l c|}
\hline
\multicolumn{2}{|c|}{\textbf{Regresní statistika}}\
\hline
Násobné  $R^2$  & 0,860021\
Hodnota spolehlivosti  $R^2$  & 0,739637\
Nastavená hodnota spolehlivosti  $R^2$  & 0,725563\
Chyba stř. hodnoty & 1,705091\
Pozorování & 40\
\hline
\end{tabular}
\end{table}
\begin{table}
%\noindent\textbf{Tabulka 4b} - Celkový test\
\caption{Celkový test\hspace{15cm}}
\newcolumnntype{v}{D{,}{,}{4}}
\newcolumnntype{w}{D{,}{,}{6}}
\begin{tabular}{|l c v w c c|}
\hline
\textbf{ANOVA} & & & & & \
\hline
& \textit{Stupně volnosti} & \textit{SS} & & & & \
\multicolumn{1}{c}{\textit{MS}} & & & & & & \
\multicolumn{1}{c}{\textit{F}} & & \textit{Významnost F} & & & & \
\hline
Regrese & 2 & 305,5876 & 152,793800 & 52,55461542 & 1,54248E-11\
Rezidua & 37 & 107,5714 & 2,907334 & & & \
Celkem & 39 & 413,1590 & & & & \
\hline
\end{tabular}
\end{table}
\begin{table}
%\noindent\textbf{Tabulka 4c} - Dílčí testy\
\caption{Dílčí testy\hspace{15cm}}
\newcolumnntype{d}{D{,}{,}{7}}
\newcolumnntype{e}{D{,}{,}{8}}
\newcolumnntype{f}{D{,}{,}{9}}
\newcolumnntype{g}{D{,}{,}{10}}
\newcolumnntype{h}{D{,}{,}{6}}
\begin{tabular}{|l d c e f g h|}
\hline
& \multicolumn{1}{c}{\textit{Koeficienty}} & & \textit{Chyba stř. hodnoty} & & & & \
& & \multicolumn{1}{c}{\textit{t stat}} & & & & & \
& & \multicolumn{1}{c}{\textit{Hodnota } P} & & & & & \
& & \multicolumn{1}{c}{\textit{Dolní 95\%}} & & & & & \
& & \multicolumn{1}{c}{\textit{Horní 95\%}} & & & & & \
\hline
Hranice & 6,126800 & 2,284272 & 2,682168 & 0,010867001 & 1,498430247 & & \

```

```

10,75517\\
Soubor X 1 & -0,797350 & 0,259731 & -3,069910 & 0,003997355 & -
1,323617512
& -0,27109\\
Soubor X 2 & 0,872918 & 0,123080 & 7,092300 & 2,13636E-08 &
0,623534784 &
1,12230\\
\hline
\end{tabular}
\end{table}
\endlandscape
}
\eject
\noindent
Rovnice odhadované regresní roviny je následující:
\begin{equation}
\hat{\pi}_t=6,1268-0,79735U_t+0,873\pi_t;R^2=0,740
\end{equation}
Znaménka parametrů jsou v souladu s ekonomickou teorií i hodnota
R2 se téměř oproti předchozím modelům zdvojnásobila. Všechny koeficienty jsou
statisticky významné. I celkový F-test (tab. 4b) potvrdil významnost celého
modelu
(hodnota R2 je poměrně vysoká). Vzroste-li nezaměstnanost o 1%,
vyvolá to
pokles inflace o 0,797%. Vzroste-li míra očekávané inflace o 1%, vyvolá
to vzrůst
skutečné inflace o 0,873%.
Nyní pomocí sekvenčního F-testu otestujeme přínos zavedení inflačních
očekávání do
modelu. Celkový součet čtverců  $S_y = \sum(y_i - \overline{y})^2 = 413,159$ 
sn-1
stupni volnosti charakterizuje celkovou variabilitu proměnné inflace,
teoretický
součet čtverců  $S_{T(1)} = \sum(Y_i^{(1)} - \overline{y})^2 = 159,3466$ 
s1 stupněm
volnosti charakterizuje variabilitu vysvětlenou regresní přímkou, teoretický
součet
čtverců  $S_{T(2)} = \sum(Y_i^{(2)} - \overline{y})^2 = 305,5876$  se 2
stupni volnosti
charakterizuje variabilitu vysvětlenou lineární regresní funkcí se dvěma
regresory.
Přírůstek  $\Delta S_T = S_{T(2)} - S_{T(1)} = 146,241$  s1 stupněm
volnosti
představuje přínos očekávané inflace jako další proměnné k vysvětlení
celkové
variability inflace. Reziduální součet čtverců  $S_R = \sum(y_i -
Y_i^{(2)})^2 = 107,5714$  s n-3
stupni volnosti představuje
nevysvětlenou část
celkové variability.
Hodnota testového kritéria pro test hypotézy, že proměnná očekávaná
inflace
nepřispívá významně k vysvětlení celkové variability, je  $F = \Delta
S_T / (S_R / (n -
3)) = 50,3$ . Kritická tabulková hodnota rozdělení  $F$  pro 1 a 37 stupně
volnosti
a pro  $\alpha = 0,05$  je rovna  $F_{0,95}(1,37) = 4,1$ .
Poněvadž vyšlo, že  $F = 50,3 > F_{0,95}(1,37) = 4,1$ , zamítáme na hladině
 $\alpha = 0,05$  hypotézu  $H_0$ . Očekávaná inflace tedy přinesla statisticky
významné zlepšení vysvětlující schopnosti modelu oproti modelu klasické
Phillipsovy křivky.
Lze tedy říci, že poslední model ve tvaru (7), zahrnující adaptivní inflační
očekávání,
může sloužit jako adekvátní model k vyjádření i k prognóze dynamického
vztahu
mezi inflací a nezaměstnaností v ČR v letech 1997-2006. Pro ilustraci
vidíme na
obr. 1 grafický průběh původních a vyrovnaných hodnot inflace
vypočtených dle
modelu (7).
\newcolumntype{d}{D{,}{,}{4}}
\newcolumntype{e}{D{,}{,}{9}}
\begin{longtable}{|c|c|d|e|}
\caption{Vyrovnané hodnoty \hspace{3cm} M.S.E.=2,69} \\
\hline
Rok & Kvartál & \multicolumn{1}{c|}{Inflace  $\pi_t$ } & &

```

```

\multicolumn{1}{c}{Vyrovnání}\\
\endfirsthead
\caption{Pokračování\hspace{4cm}$M.S.E.=2,69$}
\endhead
\hline
1997 & Q1 & 6,8 & 8,634022700\\
\hline
& Q2 & 6,8 & 8,474552175\\
\hline
& Q3 & 10,3 & 8,686918121\\
\hline
& Q4 & 10,0 & 8,804435827\\
\hline
1998 & Q1 & 13,4 & 9,348510427\\
\hline
& Q2 & 12,0 & 9,858294254\\
\hline
& Q3 & 8,8 & 8,989836746\\
\hline
& Q4 & 6,8 & 8,121321312\\
\hline
1999 & Q1 & 2,5 & 6,117653066\\
\hline
& Q2 & 2,2 & 5,164013729\\
\hline
& Q3 & 1,2 & 3,748107182\\
\hline
& Q4 & 2,5 & 3,225069758\\
\hline
2000 & Q1 & 3,8 & 2,634922059\\
\hline
& Q2 & 4,1 & 3,172002100\\
\hline
& Q3 & 4,1 & 3,250830979\\
\hline
& Q4 & 4,0 & 3,328329836\\
\hline
2001 & Q1 & 4,1 & 3,120740327\\
\hline
& Q2 & 5,5 & 3,725338356\\
\hline
& Q3 & 4,7 & 3,590938402\\
\hline
& Q4 & 4,1 & 3,825185808\\
\hline
2002 & Q1 & 3,7 & 3,767332754\\
\hline
& Q2 & 1,2 & 3,778950182\\
\hline
& Q3 & 0,8 & 3,112422728\\
\hline
& Q4 & 0,6 & 2,592125222\\
\hline
2003 & Q1 & -0,4 & 1,825886138\\
\hline
& Q2 & 0,3 & 1,606203215\\
\hline
& Q3 & 0,0 & 0,915617303\\
\hline
& Q4 & 1,0 & 0,776937863\\
\hline
2004 & Q1 & 2,5 & 0,513246200\\
\hline
& Q2 & 2,9 & 1,153531843\\
\hline
& Q3 & 3,0 & 1,364277657\\
\hline
& Q4 & 2,8 & 1,497957609\\
\hline
2005 & Q1 & 1,5 & 1,218472492\\
\hline
& Q2 & 1,8 & 1,653247444\\
\hline
& Q3 & 2,2 & 1,688171546\\
\hline
& Q4 & 2,2 & 1,716110828\\
\hline

```

```

2006 & Q1 & 2,8 & 1,68374183\\
\hline
& Q2 & 2,8 & 2,503040414\\
\hline
& Q3 & 2,7 & 2,646662304\\
\hline
& Q4 & 1,7 & 1,965041266\\
\hline
\end{longtable}
\begin{figure}[ht]
\caption{Výsledný model Phillipsovy křivky v ČR (10 let: 1997-2006,
čtvrtletní
údaje)}
\begin{center}
\includegraphics[width=117mm]{obrazek1.eps}
\end{center}
\end{figure}
\subsection*{Závěr:}
\noindent Na základě získaných výsledků ekonometrického modelu se
v~případě
tvaru regresní přímky a~hyperboly nepotvrdila teorie původní Phillipsovy
křivky.
Tato teorie byla založená na jednoduchém inverzním vztahu inflace
a~nezaměstnanosti. Oba modely měly nízkou úroveň koeficientu
determinace,
a~proto jsme je museli odmítnout jako neadekvátní a~nepoužitelné pro
predikci
budoucí míry inflace. Potvrdilo se tedy, že ve zkoumaném období
neexistoval
jednoduchý vztah mezi inflací a~nezaměstnaností (nepřímá úměrnost).
Zařazením další proměnné do modelu - očekávané inflace (jak navrhoval
Phelps,
nositel Nobelovy ceny za ekonomii v~roce 2006) - jsme získali vyšší úroveň
koeficientu determinace. Tento model splňoval podmínky verifikace
ekonomické,
statistické a~rovněž ekonometrické. Podle sekvenčního F-testu přinesl
neoklasický
model významné zlepšení vysvětlení variability inflace oproti klasické
Phillipsově
křivce. Pokud bychom chtěli dosáhnout ještě větší přesnosti, tento model by
musel
obsahovat další proměnné, které ovlivňují hlavní zkoumanou
charakteristiku.
\begin{thebibliography}{99}
\bibitem{pa1}
DORNBUSH, R., FISCHER, S. \textit{Makroekonomie.} Praha: SPN a
Nadace
Economics, 1994. ISBN 80-04-25556-6
\bibitem{pa2}
HUŠEK, R., PELIKÁN, J. \textit{Aplikovaná ekonometrie. Teorie a praxe.}
Praha:
Professional Publishing, 2003. ISBN 80-86419-29-0
\bibitem{pa3}
SAMUELSON, P. A., NORDHAUS, W. D. \textit{Ekonomie.} Praha:
Svoboda,
1992. ISBN 80-205-0192-4
\end{thebibliography}
\autor{Ing. Petr Klímek, Ph.D.}
\Adresa{\\Univerzita Tomáše Bati ve Zlíně\\Fakulta managementu a
ekonomiky\\Ústav informatiky a statistiky}
\Email{klimek@fame.utb.cz}
\end{document}

```

APPENDIX P VII. THEME IMAGES USED FOR MAKING PUBLICATIONS COVERS

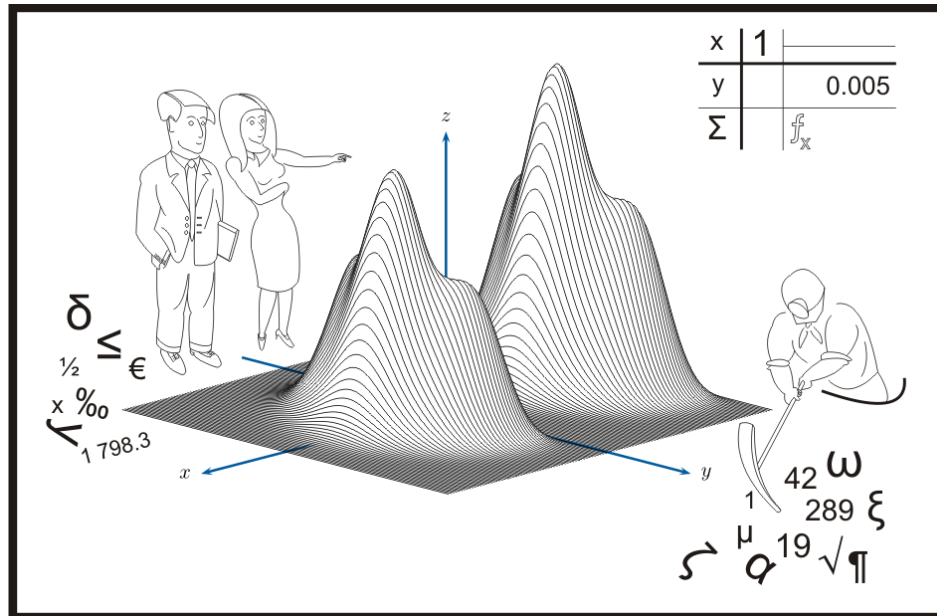


Fig. 48. Theme image of Dr. Klimek 's publication

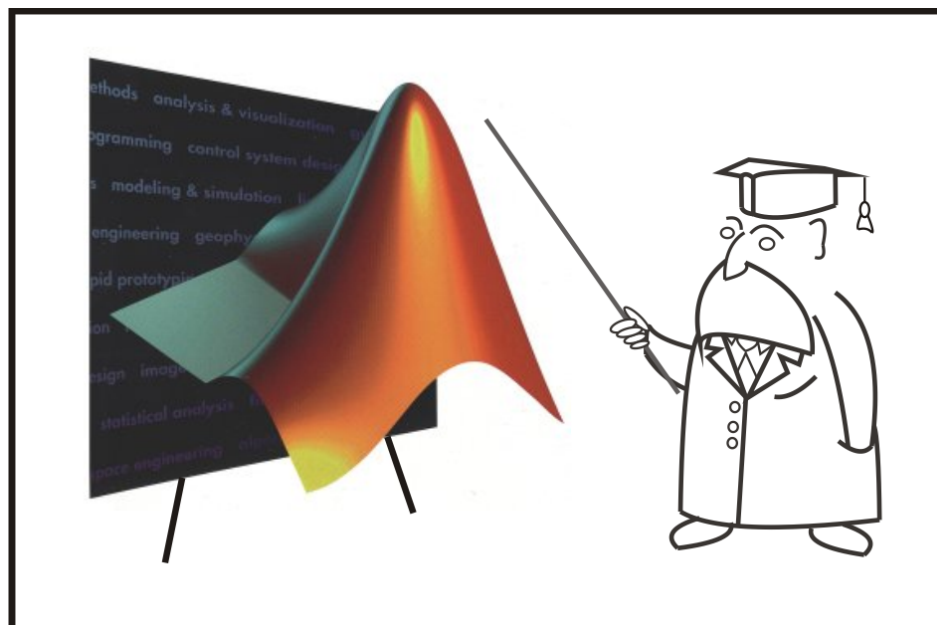


Fig. 49. Theme image of Ing. Kovářik 's publication



## APPENDIX P VIII. SOURCE CODE OF PUBLICATION COVER FOR ING. PETR KLÍMEK, PH.D.

### First part:

```
\documentclass{article}
\pagestyle{empty}
\usepackage{pstricks,color,pst-eps,graphicx}
\usepackage{amssymb,amsbsy}
\usepackage[czech]{babel}
\usepackage[cp1250]{inputenc}
\usepackage[T1]{fontenc}
\usepackage{enumerate}
\definecolor{myblue}{cmyk}{0.94,0.54,0,0}
\begin{document}
\TeXtoEPS % tady začíná obrázek
\psset{unit=1mm}
\begin{pspicture}(-10,-220)(340,10) % udání rozměrů obrázku
%----- Zacarek barevných pasem
\pspolygon[fillstyle=solid,fillcolor=black](-10,10)(-10,-55)(340,-55)(340,10)
\pspolygon[fillstyle=solid,fillcolor=myblue,linecolor=myblue](-10,-58)(-10,-220)
(340,-220)(340,-58)
\pspolygon[fillstyle=solid,fillcolor=white,linecolor=white](-10,-55)(-10,-58)
(340,-58)(340,-55)
%----- Konec barevných pasem
%----- Zacarek texty
\rput{0}(215,-13){\textcolor{white}{\large{\scshape{Autor:}}}}
\rput{0}(290,-13){\textcolor{white}{\large{\scshape{Rok vydání:}}}}
\rput{0}(40,-13){\textcolor{white}{\large{\scshape{Autor:}}}}
\rput{0}(115,-13){\textcolor{white}{\large{\scshape{Rok vydání:}}}}
\psline[linewidth=2pt,linecolor=white](195,-16)(310,-16)
\psline[linewidth=2pt,linecolor=white](20,-16)(135,-16)
\rput{0}(252.5,-21){\textcolor{white}{\LARGE{\textbf{\scshape{Ekonomické
aplikace statistiky}}}}}
\rput{0}(252.5,-31){\textcolor{white}{\LARGE{\textbf{\scshape{a data
miningu}}}}}
\rput{0}(77.5,-21){\textcolor{white}{\LARGE{\textbf{\scshape{Ekonomické
aplikace statistiky}}}}}
\rput{0}(77.5,-31){\textcolor{white}{\LARGE{\textbf{\scshape{a data
miningu}}}}}
\psline[linewidth=2pt,linecolor=white](195,-36)(310,-36)
\psline[linewidth=2pt,linecolor=white](20,-36)(135,-36)
\rput{0}(215,-41){\textcolor{white}{\large{\scshape{Petr KLÍMEK}}}}
\rput{0}(290,-41){\textcolor{white}{\large{\scshape{2008}}}}
\rput{0}(40,-41){\textcolor{white}{\large{\scshape{Petr KLÍMEK}}}}
\rput{0}(115,-41){\textcolor{white}{\large{\scshape{2008}}}}
\rput{90}(165,-132){\textcolor{white}{\Large{\scshape{\textbf{Ekonomické
aplikace statistiky a data miningu}}}}}
\rput{90}(165,-29){\textcolor{white}{\Large{\scshape{Petr KLÍMEK}}}}
%----- Zacatek obsah
\rput{0}(77.5,-129){\parbox[c]{10cm}{
\begin{enumerate}[I.]
\item \textcolor{white}{\textbf{Aplikovaná statistika:}}
\begin{itemize}
\item Popisná statistika
\item Analýza závislostí kvantitativních znaků
\item Analýza rozptylu (ANOVA)
\item Regresní a korelační analýza
\item Neparametrické testy
\item Analýza časových řad
\end{itemize}
\item \textcolor{white}{\textbf{Moderní směry analýzy dat:}}
\begin{itemize}
\item Vytěžování dat (Data Mining)
\end{itemize}
\item \textcolor{white}{\textbf{Ekonomická statistika:}}
\begin{itemize}
\item Indexy a diference
```

```

\item Demografická statistika
\item Cenová a bankovní statistika
\item Mezinárodní srovnávání
\end{itemize}
\item \textcolor{white}{\textbf{Výpočetní prostředí:}}
\begin{itemize}
\item Statistické funkce a procedury v Microsoft Excelu
\item Výpočty v nástavbě XLStatistics
\end{itemize}
\end{enumerate}
\begin{description}
\item \textcolor{white}{\textbf{Literatura}}
\item \textcolor{white}{\textbf{Terminologické slovníky (A--Č, F--Č
a N--Č)}}
\item \textcolor{white}{\textbf{Tabulky}}
\item \textcolor{white}{\textbf{Přílohy}}
\end{description}}
%----- Konec obsah
%----- Konec texty
%----- Zatek tematu
\pspolygon[fillstyle=solid,fillcolor=white](192.5,-89)(192.5,-169)(312.5,-169)
(312.5,-89)
\psframe[fillstyle=solid,fillcolor=white](189.5,-86)(195.5,-92)
\psframe[fillstyle=solid,fillcolor=white](189.5,-166)(195.5,-172)
\psframe[fillstyle=solid,fillcolor=white](309.5,-166)(315.5,-172)
\psframe[fillstyle=solid,fillcolor=white](309.5,-86)(315.5,-92)
\psframe[fillstyle=solid,fillcolor=black](190.5,-87)(194.5,-91)
\psframe[fillstyle=solid,fillcolor=black](190.5,-167)(194.5,-171)
\psframe[fillstyle=solid,fillcolor=black](310.5,-167)(314.5,-171)
\psframe[fillstyle=solid,fillcolor=black](310.5,-87)(314.5,-91)
\rput{0}(252.5,-129){\includegraphics[width=11cm]{Theme.eps}}
%----- Konec tematu
%----- Zatek oramovani
%\psline[linewidth=3.5pt,linecolor=white](0,0)(0,-210)
%\psline[linewidth=3.5pt,linecolor=white](0,-210)(330,-210)
%\psline[linewidth=3.5pt,linecolor=white](330,-210)(330,0)
%\psline[linewidth=3.5pt,linecolor=white](330,0)(0,0)
%\psline[linewidth=8pt,linecolor=white](155,3)(155,-213)
%\psline[linewidth=8pt,linecolor=white](175,3)(175,-213)
%%\psline[linewidth=1.5pt,linecolor=red](0,0)(0,-210)(330,-210)(330,0)(0,0)(0,-2)
%%\psline[linewidth=1.5pt,linecolor=red](155,0)(155,-210)
%%\psline[linewidth=1pt,linecolor=red](155,10)(155,5)
%.....ryska
%%\psline[linewidth=1pt,linecolor=red](155,-215)(155,-220)
%.....ryska
%%\psline[linewidth=1.5pt,linecolor=red](175,0)(175,-210)
%----- Konec oramovani
\end{pspicture}
\endTeXtoEPS % konec obrázku
\end{document}

```

## Second part:

```

\documentclass{article}
\usepackage[a3paper,landscape,ignoreall]{geometry}
\usepackage[cp1250]{inputenc}
\usepackage[T1]{fontenc}
%\usepackage{czech}
\usepackage{graphicx,color}
\usepackage{pstricks}
\begin{document}
\hoffset = -20mm
\pagestyle{empty}
\begin{center}
\includegraphics{obrazek_II.pdf}
\end{center}
\end{document}

```

## APPENDIX P IX. SOURCE CODE OF PUBLICATION COVER FOR ING. MARTIN KOVÁŘÍK

### First part:

```
\documentclass{article}
\pagestyle{empty}
\usepackage{pstricks,color,pst-eps,graphicx}
\usepackage{amssymb,amsbsy}
\usepackage[zech]{babel}
\usepackage[cp1250]{inputenc}
\usepackage[T1]{fontenc}
\begin{document}
\TeXtoEPS % tady začíná obrázek
\psset{unit=1mm}
\begin{pspicture}(-3,-213)(333,3) % udání rozměrů obrázku
\pspolygon[fillstyle=crosshatch*,fillcolor=black,hatchcolor=white,hatchwidth=1.2pt,hatchsep=2pt,hatchangle=0](-3,3)(-3,-12)(333,-12)(333,3)
%\pspolygon[fillstyle=crosshatch*,fillcolor=black,hatchcolor=white,hatchwidth=1.2pt,hatchsep=2pt,hatchangle=0](175,-187)(175,-207)(327,-207)(327,-203)(307,-203)(307,-187)
%\pspolygon[fillstyle=crosshatch*,fillcolor=black,hatchcolor=white,hatchwidth=1.2pt,hatchsep=2pt,hatchangle=0](3,-187)(3,-207)(155,-207)(155,-187)
\pspolygon[fillstyle=crosshatch*,fillcolor=black,hatchcolor=white,hatchwidth=1.2pt,hatchsep=2pt,hatchangle=0](-3,-187)(-3,-214)(333,-214)(333,-203)(305.5,-203)(305.5,-193)(333,-193)(333,-187)
%\psline[linewidth=3.5pt](0,0)(0,-210)
%\psline[linewidth=3.5pt](0,-210)(330,-210)
%\psline[linewidth=3.5pt](330,-210)(330,0)
%\psline[linewidth=3.5pt](330,0)(0,0)
%\psline[linewidth=2pt,linecolor=blue](155,0)(155,-210)
%\psline[linewidth=2pt,linecolor=blue](175,0)(175,-210)
\psline[linewidth=1mm](-3,-15)(333,-15)
\psline[linewidth=1mm](-3,-30)(333,-30)
%\psline[linewidth=1mm](50,-15)(345,-15)
%\psline[linewidth=1mm](50,-30)(345,-30)
%\psline[linewidth=1mm](50.5,-15)(50.5,-30)
\psline[linewidth=1.5pt](-3,-12)(333,-12)
\psline[linewidth=1.5pt](-3,-33)(333,-33)
\psline[linewidth=1.5pt](150,-15)(133,-30)
\psline[linewidth=1.5pt](180,-15)(197,-30)
%\psline[linewidth=1.5pt](157,-33)(, -33)
\rput{90}(165,-110){\large{\textbf{Počítačové zpracování dat v programu
MATLAB}}\hspace{8mm}\itshape{Martin Kovářík}}
\rput{90}(165,-23){\huge{\textbf{1}}}
\rput{0}(261.25,-22.5){\Large{\textbf{Počítačové zpracování dat v programu
MATLAB}}}}
\rput{0}(68.75,-22.5){\Large{\textbf{Počítačové zpracování dat v programu
MATLAB}}}}
\psline[linewidth=1mm](260,-36)(333,-36)
\psline[linewidth=1mm](260,-46)(333,-46)
\psline[linewidth=1mm](260.5,-36)(260.5,-46)
\psline[linewidth=1.5pt](240,-33)(257,-49)(345,-49)
\psline[linewidth=1mm](70,-36)(-3,-36)
\psline[linewidth=1mm](70,-46)(-3,-46)
\psline[linewidth=1mm](69.5,-36)(69.5,-46)
\psline[linewidth=1.5pt](90,-33)(73,-49)(-3,-49)
\rput{0}(295,-41){\Large{\textbf{Martin Kovářík, 2008}}}}
\rput{0}(35,-41){\Large{\textbf{Martin Kovářík, 2008}}}}
\psline[linewidth=1mm](305,-193)(333,-193)
\psline[linewidth=1mm](305,-203)(333,-203)
\psline[linewidth=1mm](305.5,-193)(305.5,-203)
%\psline[linewidth=1.5pt](307,-187)(333,-187)
%\psline[linewidth=1.5pt](307,-203)(333,-203)
%\psline[linewidth=1.5pt](307,-187)(307,-203)
\rput{0}(317,-198){\Large{\textbf{1. díl}}}}
\rput{0}(245,-125){\includegraphics[height=9cm,width=12cm]{Matlab.eps}}
\rput{0}(252.5,-75){\huge{\textbf{M^A~T~L^A~B}}}}
```

```

\rput{0}(77.5,-110){\includegraphics[height=75mm]{BackX.eps}}
\rput{0}(77.5,-170){\psshadowbox*[framearc=.3]{\parbox[c]{11cm}
{\raggedright\textit{Žádné lidské zkoumání nemůže být nazváno
opravdovou vědou, pokud ho nemůžeme dokázat
matematicky}\dots\\ \raggedleft\textbf{Leonardo Da Vinci}}}}
%\psline[linewidth=1.5pt](3,-207)(327,-207)
%\psline[linewidth=1.5pt](3,-207)(3,-49)
%\psline[linewidth=1.5pt](327,-207)(327,-203)
%\psline[linewidth=1.5pt](327,-187)(327,-49)
%\psline[linewidth=2pt,linecolor=blue](0,0)(0,-210)(330,-210)(330,0)(0,0)
\end{pspicture}
\endTeXtoEPS % konec obrázku
\end{document}

```

## Second part:

```

\documentclass{article}
\usepackage[a3paper,landscape,ignoreall]{geometry}
\usepackage[cp1250]{inputenc}
\usepackage[T1]{fontenc}
%\usepackage{czech}
\usepackage{graphicx,color}
\usepackage{pstricks}
\begin{document}
\hoffset = -30mm
\pagestyle{empty}
\begin{center}
\includegraphics{obrazekY.pdf}
\end{center}
\end{document}

```

## APPENDIX P X. PHOTOGRAPHS OF PUBLICATIONS WITH REALISED COVERS

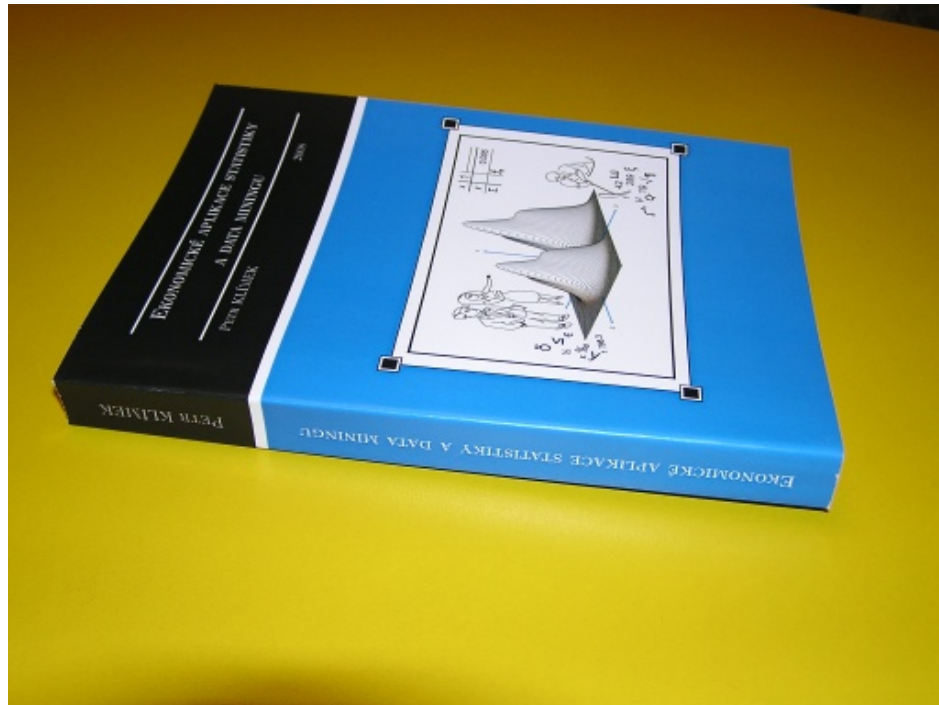


Fig. 50. Photograph of front side Dr. Klimek's publication cover

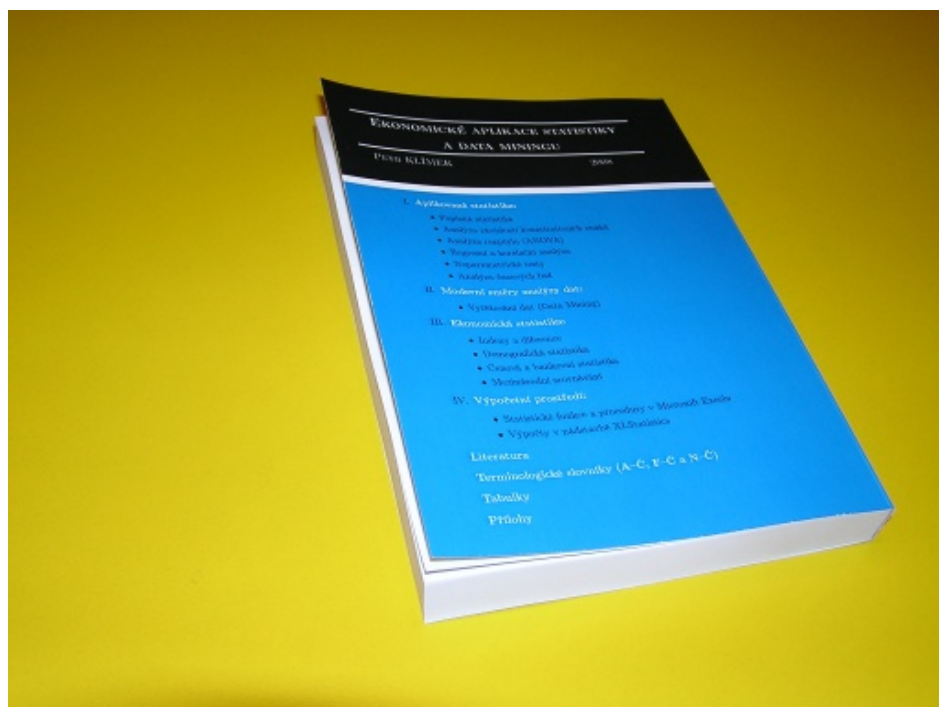


Fig. 51. Photograph of back side Dr. Klimek's publication cover

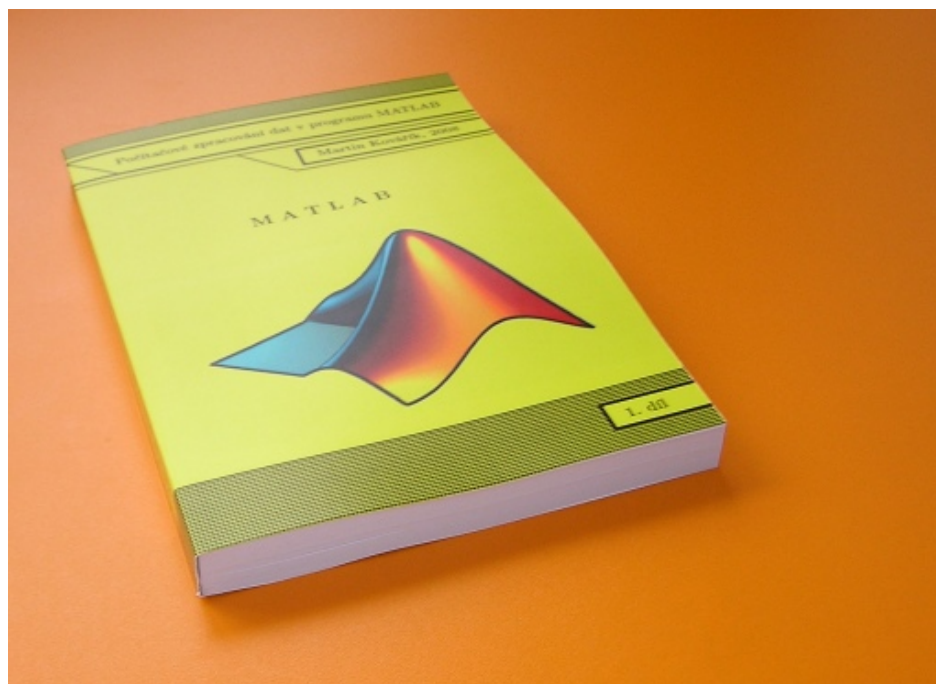


Fig. 52. Photograph of front side Ing. Kovářík 's publication cover



Fig. 53. Photograph of back side Dr. Kovářík 's publication cover

## APPENDIX P XI. USED SOFTWARE TOOLS

At this place I'd like to itemize all the software tools, I've used for making this bachelor work.

- **Operating system:**
  - Microsoft Windows XP Home SP3
  
- **DTP tools:**
  - Microsoft Office 2003 Professional SP3
  - OpenOffice.org 2.4
  - L<sup>A</sup>T<sub>E</sub>X system
    - \* MikT<sub>E</sub>X 2.7
    - \* T<sub>E</sub>XnicCenter 7.0.1 Beta
  
- **Graphics software:**
  - CorelDraw X4 suite – trial version
  - Gimp 2.0
  
- **Support tools**
  - The Sage language dictionary
  - Adobe Acrobat Reader 8.2.0
  - Ghostscript & Ghostview