Abstract: LaTeX is a very popular platform for writing papers in economics, mainly due to its superior aesthetics in print. The question is whether the aesthetic (and other) benefits of adopting LaTeX outweigh the opportunity costs of learning and using LaTeX, which can be high even for experienced users. FaKe LaTeX using Microsoft Word has a remarkably similar visual appearance to papers produced in native LaTeX and it is easy to learn and use. This low cost alternative may be appealing to many economists.

Key words: aesthetics, economics, LaTeX, papers, productivity, writing

JEL categories: A10, A11, A13, A19

1. Introduction

LaTeX (pronounced “laytek” and written in logo form as \LaTeX) is a very popular method of writing papers in many academic fields. For example, it is now basically a de facto standard in many STEM fields, with one of the main reasons being the ability to produce
gorgeous looking mathematics in print. Economics has largely followed the lead of STEM fields in adopting LaTeX. While there is certainly room for debate on this point, I believe it is reasonable to argue that the visual aesthetics of a paper written in LaTeX are indeed superior to, say, a paper written in Microsoft Word using a standard font such as Calibri or Times Roman. In terms of aesthetics, it is not really a mystery why papers written in LaTeX have become so popular in economics. Other advantages cited by proponents of LaTeX include automatic placement and numbering of tables and figures, automatic numbering of sections, reference management, flexibility in changing formats for journals, work flow, and signalling advanced computer programming skills.

The distinctive and attractive look of papers written in LaTeX presents a dilemma to Microsoft Word users, the other technology “tribe” in economics. The question is whether the aesthetic (and other) benefits of adopting LaTeX outweigh the opportunity costs of learning and using LaTeX, which Knauff and Nejasmic (2014) indicate can be high even for experienced users. Allington (2016) notes that LaTeX is actually a markup language for typesetting publications, not what one would normally think of as a software platform for writing academic papers. Fortunately, an alternative method for writing papers is available that generates a remarkably similar appearance to those written in native LaTeX and it is easy to learn and use. I call this alternative method “FaKe LaTeX” in Microsoft Word. The purpose of this article is to explain how to write papers in economics using FaKe LaTeX.

2. Background

Before explaining how to write papers using FaKe LaTeX, it is important to understand why LaTeX became so popular in economics-related fields, such as my own, agricultural economics. The computer scientist Donald Knuth invented TeX, the precursor to LaTeX, because he was disappointed by the poor quality of published academic books in the 1970s. Knuth started the project to develop TeX in 1977 and took a decade to complete it. The history of this endeavour is interesting in and of itself, and much has been written about it.¹ Suffice it to say that Knuth cares deeply about the visual aesthetics of published work and he wants his books and papers to look beautiful in an artistic sense. He made the point this way in an interview: “We didn’t want our papers just to be there, we wanted them to be beautiful,” he protests. “I wouldn’t have wanted to write The Art of Computer Programming if it was going to look ugly.” (Platoni, 2006)

¹For example, see Ganguli (2013) and the article “Just what is TeX?” found at this link: https://www.tug.org/whatis.html.
LaTeX users extol its advantages in the composition of math within a paper. I see no reason to doubt this is true. However, I do not believe it is the primary reason for widespread adoption of LaTeX. Consider the counterfactual where LaTeX maintains its advantage in the composition of math but the output in print is ugly. Very few would use LaTeX if this were the case. Therefore, I conclude that appearance/aesthetics is the dominant reason for widespread adoption of LaTeX. This, after all, was the motivation for Knuth to create the TeX system in the first place.

My views on the “LaTeX question” have changed over time. Initially, as a non-LaTeX user, I was frustrated at the difficulty of trying to write papers jointly with students and colleagues who use LaTeX. At times, I had to resort to the old-fashioned method of scotch-taping handwritten edits on a printed copy of the paper. Conversations with numerous colleagues suggest my frustration was hardly an isolated event. This led me to think that LaTeX was just another example of a “cool kids club” that could be used to exclude the “uncool kids.”2 There may well be an element of that in economics, but reading about Knuth and his motivation for inventing TeX has given me a newfound appreciation for the importance of aesthetics in academic papers.3 Academics are real people with real emotions and they react to the “artistic” appearance of a paper, whether they want to admit it or not. At the margin, I think this can affect evaluation of one’s work.

While I believe there is widespread agreement that LaTeX papers have a superior aesthetic appeal, there is little formal evidence about the costs of adopting this production method. A thriving LaTeX eco-system can be found online, with a heavy representation of people from computer science and related fields. I tried my hand at learning LaTeX and was surprised by how much time it would take to become minimally proficient. I readily admit to being a member of the Microsoft Word (and Office) technology tribe, and also not being the most technically adept person around. At the same time, I don’t think that I should have to become a computer programmer just to write a paper.4 I also considered several LaTeX editing programs or “shells” in order to hopefully improve the benefit cost-ratio.

---

2 A less charitable interpretation is that LaTeX is used as a barrier-to-entry by the “cool kids” in the economics profession.

3 I highly recommend the article by Platoni (2006) in this regard. It contains an extended interview with Knuth that is fascinating on several levels.

4 My initial experimentation with writing in LaTeX left me with a strong feeling of *déjà vu*. I was struck by the similarity to my early experiences writing papers on a DOS-based PC in the mid-1980s before the introduction of WYSIWYG word processing packages. For those who have been around that long, who can ever forget the soft-yellow glow of plain text on the screen?
did not find these programs to be all that helpful and concluded that they would only marginally reduce the time investment required to write LaTeX documents.

One study provides some support for my personal observations. Knauff and Nejasmic (2014) conducted a study of the efficiency of using Word and LaTeX in the production of academic papers. Their findings are summarized below:

The choice of an efficient document preparation system is an important decision for any academic researcher. To assist the research community, we report a software usability study in which 40 researchers across different disciplines prepared scholarly texts with either Microsoft Word or LaTeX. The probe texts included simple continuous text, text with tables and subheadings, and complex text with several mathematical equations. We show that LaTeX users were slower than Word users, wrote less text in the same amount of time, and produced more typesetting, orthographical, grammatical, and formatting errors. On most measures, expert LaTeX users performed even worse than novice Word users. LaTeX users, however, more often report enjoying using their respective software. We conclude that even experienced LaTeX users may suffer a loss in productivity when LaTeX is used, relative to other document preparation systems. (p. 1)

Knauff and Nejasmic go on to make the following recommendations:

However, our study suggests that LaTeX should be used as a document preparation system only in cases in which a document is heavily loaded with mathematical equations. For all other types of documents, our results suggest that LaTeX reduces the user’s productivity and results in more orthographical, grammatical, and formatting errors, more typos, and less written text than Microsoft Word over the same duration of time. (p. 12)

Not surprisingly, the Knauff and Nejasmic (2014) study is highly controversial among dedicated LaTeX users. See the blog posts by JCS (2014), Wilke (2014), and Lemire (2015) for a sampling of responses to the study. One of the main criticisms is the small sample size for the study. Another is the contradictory finding that LaTeX users like LaTeX more than Word users like Word. This suggests either that the study subjects were irrational or
that the performance measurements used in the study did not adequately capture the overall efficacy of using LaTeX.\textsuperscript{5}

Even considering these criticisms, the Knauff and Nejasmic study suggests two important conclusions. First, productivity losses associated with the use of LaTeX may be real rather than imaginary in at least some circumstances. Second, there are valid reasons why LaTeX should not be considered the universal standard for writing papers in economics, as it clearly is in some quarters.

3. \textbf{FaKe LaTeX}

I believe that economists who regularly use Microsoft Word face the same dilemma as I did when considering LaTeX. We love the look of papers written in LaTeX but are uncertain whether the time investment required to learn and use LaTeX on a regular basis is a reasonable trade-off. What is a rational economist to do? I thought there simply had to be a better way. After all, this is an era where there is an app for everything. Someone else out there had to be thinking the same thing. It turns out there is an alternative that satisfies my economist mindset—FaKe LaTeX documents created in Microsoft Word (written in logo form as \textsuperscript{\textsc{F}a\textsc{K}e \textsc{L}a\textsc{T}e\textsc{X}}). That is exactly how I produced the original version of this article.\textsuperscript{6} Surprised? Most people are. One can achieve something like 95\% of the visual appearance of native LaTeX documents with a one-time investment of an hour or less.

The idea of “faking” LaTeX in Word actually has been around for a while, something of an underground phenomenon discussed online in a few blog posts (e.g., Ticoneva, 2009; Simon, 2010; Huang, undated). Combining these online sources with my own trial-and-error experimentation, I developed a “how to manual” for producing FaKe LaTeX documents. The following two sections present the steps for creating FaKe LaTeX documents in Microsoft Word for Windows and Microsoft Word for Mac, respectively.

3.1. \textbf{Microsoft Word for Windows}

The steps listed in the in this section for creating FaKe LaTeX documents were developed in Microsoft Word 2016 for Windows. The necessary steps in earlier versions of Microsoft Word for Windows may differ slightly.

a) Download and install the Open Source Latin Modern Roman 12 font. The best place to get the font is from the GUST website \url{http://www.gust.org.pl/}. GUST is the

\textsuperscript{5} I thank one of the reviewers for pointing out this criticism.

\textsuperscript{6} The Online Appendix for this article contains a pdf file of the “native” FaKe LaTeX version.
group that created and maintains the Latin Modern Roman family of fonts. The specific page to download the latest version of the Latin Modern Roman fonts is http://www.gust.org.pl/projects/e-foundry/latin-modern/download. Download the zip file with “OTF” in title. There are of course risks to downloading anything like this to your computer. You have been duly warned. After downloading the zip file, open it up, and find the font labelled \texttt{lmroman12-regular}. Double click the file and a dialogue box will open up. Click the “Install” button for the font file. When you are finished this font will be available in any and all Windows applications. It is EXACTLY the same text font used in many LaTeX-generated papers. The font size can be adjusted up or down as usual and bolding and italicizing also works with the font. There are many other fonts included in the zip file from GUST and using some of these other font options may better optimize appearance, but I have concluded it is not worth the time needed to figure it out. I only use the \texttt{lmroman12-regular} font. Please also note that the font appears as “LM Roman 12” rather than “Latin Modern Roman 12” in Word for Windows.

b) Download and install the Open Source Latin Modern Math font. The specific page to download the latest version of the font from GUST is http://www.gust.org.pl/projects/e-foundry/lm-math/download. Again, download the zip file with “OTF” in title. There are of course risks to downloading anything like this to your computer. You have been duly warned. After downloading the zip file, open it up, and find the “OTF” folder. The \texttt{latinmodern-math} font is found inside the “OTF” folder. Double click the file and a dialogue box will open up. Click the “Install” button for the font file. This is EXACTLY the same math font used in most LaTeX papers. If you doubt the ability of the FaKe LaTeX method to generate nice looking math, consider this example produced with the Equation Editor in Word for Windows and the Latin Modern Math font:

\[
\Delta P_t = \mu + \sum_{j=1}^{J} \lambda^j S^j_t + \sum_{p=1}^{P} \delta_p \Delta P_{t-p} + \varepsilon_t.
\]

---

7 As a backup in case the GUST links do not work for some reason, I posted a version of Latin Modern family of font files on the research page of my personal website found at http://www.farmdoc.illinois.edu/ir-win/research.html. Scroll down to the font links under “Miscellaneous” and click to download.

8 As of November 27, 2018, the file and link were listed as follows: The Latin Modern collection v. 2.004—OTF files (4MB; a “flat” zip archive, primarily for non-TeXies).

9 As of November 27, 2018, the file and link were listed as follows: The font itself, with documentation: Latin Modern Math (OTF), version 1.959.
c) The default font for the Equation Editor will need to be set to Latin Modern Math. Create an equation or click on an existing one in a Word for Windows document. This will reveal the “Equation Tools: Design” part of the Word ribbon. Next, click on the lower right arrow of “Tools,” which will bring up a dialog box for “Equation Options.” A dropdown box should be visible for “Default Font for Math Regions.” Click the dropdown box and select “Latin Modern Math.” If for some reason this does not work you can also click the “Normal Text” button under “Tools” in the “Equation Tools: Design” part of the Word ribbon to allow the font to be used in equations.\footnote{Mathtype is a popular add-in for Word for Windows that is an alternative for creating equations. I experimented with Mathtype and was able to successfully define Latin Modern Math font as the default font for equations. The resulting equations displayed as expected within the Mathtype editing workspace. However, the equations did not display correctly when published within a Word for Windows document. Unless there is a work-around that I do not know about (certainly a possibility given my inexperience with Mathtype), the implication is that Mathtype cannot be used to create equations for a FaKe \LaTeX{} document in Word for Windows.}

d) The Latin Modern Roman 12 font can be used for text in Word as well as tables and figures in Excel. The ability to use Excel to make tables and figures is another advantage of the FaKe \LaTeX{} method, especially for economists who prefer the Microsoft Office suite of software tools. My personal preference is to use the Latin Modern Roman Sans font for tables and figures in Excel. This font is included in the zip file downloaded in part (a). Simply search for the file named \texttt{lmsans12-regular} and double-click the file to bring up the installation dialogue box. Please also note that the font appears as “LM Sans 12” rather than “Latin Modern Sans 12” in Word for Windows.

e) Under the “Font>Advanced” settings:

i. Check the box for “Kerning.”

ii. Set the “Points and Above” to “1.”

iii. Set “Ligatures” to “Standard Only.”

f) Under “Layout>Hyphenation” settings check “Automatic.”

g) Under “Layout>Paragraph” settings use “Justified” and set margins to 1” all the way around.
h) Use a big font, like 24- or 28-point, for the title and 14- or 16-point font for headings.

i) Alternatively, one can start with the FaKe LaTeX template found under #3 in the blog post by Simon (2010).\(^\text{11}\) Make sure to check out his pdf of the template just for fun.

j) Convert the Word file to pdf format to complete the process. I noticed that hard copy printed versions from Word for Windows look slightly worse than pdf versions. I am not sure why this is the case or if it’s just me. I leave it to others to determine if the differences really are significant, but just to be safe I convert everything to pdf format before printing hard copies or posting online.

3.2. Microsoft Word for Mac

The steps listed in the in this section for creating FaKe LaTeX documents were developed in Microsoft Word for Mac (version 15.38). The necessary steps in earlier versions of Microsoft Word for Mac may differ slightly.

a) Download and install the Open Source Latin Modern Roman 12 font. The best place to get the font is from the GUST website \url{http://www.gust.org.pl/}. GUST is the group that created and maintains the Latin Modern Roman family of fonts. The specific page to download the latest version of the Latin Modern Roman fonts is \url{http://www.gust.org.pl/projects/e-foundry/latin-modern/download}.\(^\text{12}\) Download the zip file with “OTF” in title.\(^\text{13}\) There are of course risks to downloading anything like this to your computer. You have been duly warned. After downloading the zip file, open it up, and find the font labelled \texttt{lmroman12-regular}. Click on the file and a dialogue window will pop up. Click “Install Font” in the lower right corner of the window. After installation, the font should be added under “User” in the dialogue box. Within this section, select the Latin Modern Roman file that you downloaded and right-click it, which will bring up a menu with “Validate Font.” Click this menu item to complete installation. When you are finished this font will be available in

\(^{11}\) The American Economic Association also provides Word templates for journals that may be a useful resource at this step: \url{https://www.aeaweb.org/journals/policies/templates}.

\(^{12}\) As a backup in case the GUST links do not work for some reason, I posted a version of Latin Modern family of font files on the research page of my personal website found at \url{http://www.farmdoc.illinois.edu/ir-win/research.html}. Scroll down to the font links under “Miscellaneous” and click to download.

\(^{13}\) As of November 27, 2018, the file and link were listed as follows: The Latin Modern collection v. 2.004—OTF files (4MB; a “flat” zip archive, primarily for non-TeXies).
all installed Microsoft applications for the Mac. It is EXACTLY the same text font
used in many LaTeX-generated papers. The font size can be adjusted up or down
as usual and bolding and italicizing also works with the font. There are many other
fonts included in the zip file from GUST and using some of these other font options
may better optimize appearance, but I have concluded it is not worth the time needed
to figure it out. I only use the \texttt{lmroman12-regular} font.

b) Download and install the Open Source Latin Modern Math font. The specific page
to download the latest version of the font from GUST is \url{http://www.gust.org.pl/projects/e-foundry/lm-math/download}. Again, download the zip file with “OTF” in
title.\footnote{As of November 27, 2018, the file and link were listed as follows: The font itself, with documentation: \texttt{Latin Modern Math (OTF), version 1.959}.} There are of course risks to downloading anything like this to your computer. You have been duly warned. After downloading the zip file, open it up, and find the
“OTF” folder. The \texttt{latinmodern-math} font is found inside the “OTF” folder. Click
on the file and a dialogue window will pop up. Click “Install Font” in the lower right
corner of the window. After installation, the font should be added under the “User”
section of your Mac. Within this section, select the Latin Modern Math file that you
downloaded and right-click it, which will bring up a button for “Validate Font.”
Click this button to complete installation. When you are finished this font will be
available in all installed Microsoft applications for the Mac. This is EXACTLY the
same math font used in most LaTeX papers. If you doubt the ability of the FaKe
LaTeX method to generate nice looking math, consider this example produced with
the Equation Editor in Word for Mac:

\[ \Delta P_t = \mu + \sum_{j=1}^{J} \lambda_j S_t^j + \sum_{p=1}^{P} \delta_p \Delta P_{t-p} + \epsilon_t. \]

c) The default font for the Equation Editor will need to be set to Latin Modern Math.
Go to “Format>Equation Options” and under “Default Font for Equations” select
“Latin Modern Math.” Click “Ok” and this will set Latin Modern Math as the
default font for all equations.

d) The Latin Modern Roman 12 font can be used for text in Word for Mac as well as
tables and figures in Excel for Mac. The ability to use Excel to make tables and
figures is another advantage of the FaKe LaTeX method, especially for economists
who prefer the Microsoft Office suite of software tools. My personal preference is to
use the Latin Modern Roman Sans font for tables and figures in Excel. This font is
included in the zip file downloaded in part (a). Simply search for the file named \textit{lmsans12-regular} and click it to install using the same steps as before.

e) Under the “Format>Font>Advanced” settings:
   a. Check the box for “Kerning.”
   b. Set “Points and Above” to “1.”
   c. Set “Ligatures” to “Standard Only.”


g) Under “Format>Paragraph” set the “Alignment” to “Justified.”

h) Under “Layout>Margins” set “Custom Margins” to 1” all the way around.

i) Use a big font, like 24- or 28-point, for the title and 14- or 16-point font for headings.

j) Alternatively, one can start with the FaKe LaTeX template for Word for Windows found under #3 in the blog post by Simon (2010). Make sure to check out his pdf of the template just for fun.

k) Convert the Word file to pdf format to complete the process. I noticed that hard copy printed versions from Word look slightly worse than pdf versions. I am not sure why this is the case or if it’s just me. I leave it to others to determine if the differences really are significant, but just to be safe I convert everything to pdf format before printing hard copies or posting online.

3.3. Additional Points

It is important to emphasize that FaKe LaTeX will, by definition, always be an imperfect replication of true LaTeX. A good discussion in this regard can be found at the \textit{TeX-LaTeX Stack Exchange} thread entitled, “Make MS Word document look like it has been typeset in LaTeX.” One commenter in the thread, Yiannis Lazarides, put it this way: “You can call a mule a horse, but will never make it a horse. No amount of fiddling can

\footnotesize

\footnotesize{\textsuperscript{15} The American Economic Association also provides Word templates for journals that may be a useful resource at this step: https://www.aeaweb.org/journals/policies/templates.}

\footnotesize{\textsuperscript{16} https://tex.stackexchange.com/questions/8308/make-ms-word-document-look-like-it-has-been-typeset-in-latex}
make a Word document look like one typeset with TeX, especially one that contains a serious amount of math. Major difference will remain in letter spacing, interword space, paragraph justification, hyphenation, page breaking and adjustment of floats.” I do not place as much weight on these differences as others may, particularly if their papers are math heavy.

Another point pertains to collaboration. As discussed earlier, it is difficult for a non-LaTeX user to collaborate with a LaTeX user in writing a paper. In contrast, collaboration is relatively seamless for FaKe LaTeX users, since they are using the same font and formatting in Word for Windows or Word for Mac. This also allows the use of automatic track changes features in Word, which undoubtedly simplifies the process of collaboration, particularly with multiple authors. What about the case where one person uses FaKe LaTeX in Word but another Word user does not? I tested this out on a couple different computers using Word for Windows and found the same result—each time Word substituted a reasonable font for the missing Latin Modern Roman font and there were only minor differences in formatting. This makes sense because in each instance the same word processing package is being used with relatively minor differences in formatting. I believe it is safe to conclude that collaboration is largely seamless between FaKe LaTeX and non-FaKe LaTeX users in Microsoft Word for Windows or Word for Mac.

Finally, here is a summary of what I see as the pros and cons of the FaKe LaTeX method:

**Pros**

- Looks great
- Simplicity of Word
- Ease of sharing documents
- Tracking changes for shared editing
- Tables and charts may be produced in Excel
- Quick and easy to learn and implement

**Cons**

- Math formatting may not be optimal
- Less availability of journal templates
- Reference management not automated
I should also emphasize that FaKe LaTeX is not the only alternative to true LaTeX. Alllington (2016) and the comments to his article contain a nice discussion of other possible production methods for papers.

4. FaKe Beamer

Economists who write papers in LaTeX often use a production platform called “Beamer” to generate presentation slides. It is actually a special syntax for creating presentation slides from within LaTeX, and as such it provides a structured programming environment that has more flexibility than its main competitor, Microsoft Powerpoint. However, the same tradeoffs discussed earlier for LaTeX basically apply in equal measure to Beamer. It turns out that one can also generate FaKe Beamer presentations in Powerpoint. Two steps are required:

a) Download the Open Source Latin Modern Roman Sans 12 font. This font is included in the zip file downloaded in the previous section. Simply search for the file named lmsans12-regular and double-click to install it. This is EXACTLY the same font used in most Beamer presentations.

b) You can develop your own FaKe Beamer Powerpoint template or download one that I modified and made available on the research page of my personal website: http://www.farmdoc.illinois.edu/irwin/research.html. Scroll to the “Miscellaneous” section and download the file “FaKe Beamer Powerpoint template.”

c) Convert the Powerpoint file to pdf format to complete the process. This is not absolutely necessary but displaying the presentation in pdf format will prevent compatibility problems that can arise. It is not unusual to make use of someone else’s laptop or one provided at a venue instead of the same machine used to create the presentation. If the projection laptop does not have the Latin Modern Sans font installed, Powerpoint will make a substitution for the missing font and this may create a variety of embarrassing display problems.

5. Conclusions

For many economists, the aesthetic appeal of papers written in LaTeX is strong. The question is whether the aesthetic (and other) benefits of adopting LaTeX outweigh the

17 The original source for the FaKe Beamer Powerpoint template is Damodar Rajbhandari of St. Xavier’s College in Nepal. I modified his template to use the Latin Modern Sans font. The original template can be found here: https://figshare.com/articles/Beamer-like_Power-point_template/5286040.
opportunity costs of learning and using LaTeX, which can be high even for experienced users. This is a particularly acute dilemma for Microsoft Word users, the other technology “tribe” in economics. Fortunately, there is an alternative method for writing papers—FaKe LaTeX in Microsoft Word—that has a remarkably similar visual appearance to papers produced in native LaTeX and it is easy to learn and use. Economists interested in improving the aesthetic appeal of their papers without investing substantial time in learning LaTeX may want to consider this method.

6. References


