

**Reshaping financial systems – identifying the role of ICT in diffusion of financial innovations.  
Recent evidence from European countries.**

**Non-technical summary**

The paper looks at the innovative financial products and considers the role of information and communication technologies (ICT) in their development dynamic and patterns. Exchange traded funds (ETFs) are the discussed category of financial innovations. ETFs are investment funds whose shares are traded on stock exchanges. ETF markets in European countries grow in different ways but the features and rate of these processes have not yet been considered in the previous research.

To meet the major analytical goals the paper studies the development of European ETF markets using diffusion models which show the spread of various innovations. The latter indicates that ETFs are analyzed analogically to other types of innovative products, and next the ETFs diffusion paths are examined. Next, the relationships between ETFs and ICT are verified and compared with the impact of different parts of the financial markets. This research considers six European countries namely: Germany, France, Italy, United Kingdom, Poland and Hungary. Additionally, Japan and South Korea are chosen for comparisons. Development of ETF markets is measured with the turnover of these products, and adoption of ICT with the percentage of population using internet. The time span of our analysis covers the period between 2004 and 2015.

The major findings indicate that:

- new technologies (ICT) were adopted in all selected countries, and the achieved ICT penetration rates are similar in 2015;
- development of ETF markets was most dynamic in Italy and France and the slowest in other countries;
- logistic growth model allows describing well the ETFs development patterns, as well as allows generating predictions;
- market share of ETFs was volatile, marked by temporal abrupt ups and downs, but the general trend was positive;
- adoption of ICT influenced positively the diffusion of ETFs;
- relationship between ETFs and other parts of financial markets results to be complex; however we have found the positive association of ETFs versus stocks, while negative versus bonds.

Results highlight the significant differences in the diffusion of ETFs among European countries and suggest the important role of ICTs in shaping their diffusion paths and dynamic. However, despite high level of ICT adoption in most analyzed countries, not in all cases the diffusion of ETFs is identified. European countries in most cases still lag behind Japan and South Korea, which suggests the important role of other factors which may impede rapid development of financial innovations across European stock exchanges.

Keywords: financial innovation, diffusion, exchange traded funds, information and communication technologies.