

Model of the Influence of Intensity of Trade on Changing of Wages of Employees of an Industrial Enterprise

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Abstract: *In this paper we introduce a model for prognosis of changing of wages of employees of an industrial enterprise. The introduced model describes the dynamics of developing of economic systems under influence of trade-related effects*

Keywords: *industrial enterprise; changing of wages of employees; influence of trade-related effects.*

Introduction

One of actual questions of development of economic is forecasting the profit of an enterprise, guided to finance the salaries of its employees [1-6]. A change in the volume of products manufactured by an enterprise, as well as a change in prices for it and a decrease in overhead costs, leads to a change in the size of the wages of employees of the enterprise. In this paper we introduce a quantitative method for forecasting the wages of employees of an enterprise. Framework the method we also consider an analytical approach for solution of equations, which were used in the introduced model.

Method of Solution

Let us describe changing of wages by the following equation

$$\frac{dK(t)}{dt} = Y(t) - D(t) - a \cdot K(t) \quad (1)$$

with initial condition

$$K(0) = 0. \quad (2)$$

Here $K(t)$ is the varying in time wages; t is the current time; $Y(t)$ is the enterprise revenue; $D(t)$ is the enterprise overhead; a is the wage withdrawal ratio (formation of various reserves). Zero initial condition means that at the time the enterprise started operating, its employees had no any wages. The solution of this equation framework the standard procedure [7] and account the initial condition (2) leads to the following result

$$K(t) = e^{-at} \int_0^t e^{a\tau} [Y(\tau) - D(\tau)] d\tau. \quad (3)$$

Fig. 1 presents typical dependences on time t of wages of employees of an industrial enterprise, which described by Eq.(3).

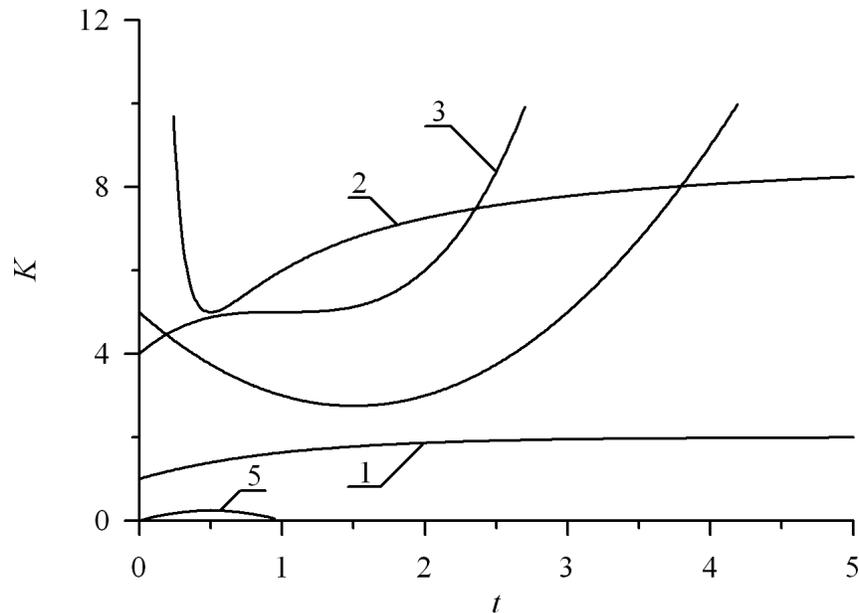


Figure 1: Typical dependences on time t of wages of employees of an industrial enterprise, which described by Eq.(3)

Conclusion

This paper presents a model for prognosis of changes of wages with time. The introduces model describes changing of value of wages with account changes in the company's revenue and overhead costs.

References

- [1] D.T. Cassidy. (2018). *Journal of Mathematical Finance*. **Vol. 8** (3). P. 335-348.
- [2] D. Kumar, S. Maheswaran. (2017). *Studies in Economics and Finance*. **Vol. 34** (4). P. 506-526.
- [3] F. Unbehaun (2018). F. Fuerst. *Studies in Economics and Finance*. **Vol. 35** (1). P. 25-43.
- [4] I. Tlemsani (2019). R. Matthews. *Theoretical Economics Letters*. **Vol. 9** (6). P. 1967-1980.
- [5] E.L. Pankratov. (2018). *Journal of Coupled Systems and Multiscale Dynamics*. **Vol. 6** (2). P. 154-157.
- [6] E.L. Pankratov. (2019). *Global Economy Journal*. **Vol. 19** (1). P. 1950007-1—1950007-9 (2019).
- [7] G. Korn, T. Korn. (1969). *Mathematical Handbook for scientists and engineers. Definitions, theorems and formulas for reference and review*. Second edition (McGraw-Hill Book Company. New York).