

**Kajian Distribusi Rapat Peluang Kurs Mata Uang Di Pasar Valuta Asing Dengan
Distribusi Gaussian Dan Distribusi Eksponensial**

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Nilai tukar mata uang asing suatu negara merupakan indikator stabilitas ekonomi yang harus selalu dicermati dan dianalisa secara terus menerus. Prediksi nilai tukar yang akurat merupakan faktor penting bagi keberhasilan banyak bisnis pada lembaga keuangan. Distribusi rapat peluang harga kurs mata uang asing di pasar valuta asing perlu dikaji karena mencerminkan proses yang terjadi di pasar keuangan tersebut. Kurs mata uang pada penelitian ini diasumsikan mengikuti proses Markov. Sebagai sampel akan diambil tiga kurs mata uang yang ada di dunia yaitu USD/EUR, USD/IDR dan USD/VND. Berdasarkan data series kurs harian ketiga sampel tersebut dibuat distribusi rapat peluang *ln return*. Distribusi rapat peluang *ln return* yang diperoleh kemudian dibandingkan dengan distribusi Gaussian dan distribusi eksponensial. Hasil pencocokan antara distribusi Gaussian dengan distribusi rapat peluang *ln return* empiris menunjukkan terjadi kesesuaian di bagian puncak dan ekor hanya untuk kurs mata uang USD/EUR, sedangkan untuk USD/IDR dan USD/VND distribusi Gaussian hanya sesuai dibagian puncak saja namun tidak di bagian ekor. Distribusi rapat peluang empiris *ln return* untuk USD/IDR dan USD/VND pada bagian ekor lebih sesuai dengan distribusi eksponensial.

Kata Kunci: Valuta asing, proses Markov, distribusi Gaussian, distribusi eksponensial

ABSTRACT

**Study Of Probability Density Distribution In The Foreign Exchange Market With
Gaussian And Exponential Distribution**

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The foreign currency exchange rate of a country is a sign of ongoing economic stability and needs to be tracked and studied carefully. Many businesses in financial institutions depend on accurate exchange rate forecasting to succeed. In order to understand the activities that take place in the financial market, it is necessary to study the distribution of meeting opportunities for foreign exchange rates on the foreign exchange market. The Markov process is assumed to govern the currency exchange rate in this study. Three global exchange rates, namely USD/EUR, USD/IDR, and USD/VND, will be used as a sample. A probability density of \ln returns distribution is built using the data series on the daily exchange rate of the three samples. The derived probability density distribution of \ln returns is then contrasted with the Gaussian distribution and the exponential distribution. According to the results of the comparison between the empirical probability density distribution of \ln returns and the Gaussian distribution, only the USD/EUR exchange rate matches the distribution at the top and tail, while the USD/IDR and USD/VND only match at the top but not the tail. For USD/IDR and USD/VND, the distribution of the empirical probability density \ln return in the tail is more consistent with the exponential distribution..

Keywords: Foreign exchange, Markov process, exponential distribution, Gaussian distribution,