DYNAMIC OF CONDITIONAL CORRELATION CURVES AND 
THE NEW FUNCTIONAL PORTFOLIO VAR

PATRICK W. SAART
Cardiff Business School, Cardiff University, United Kingdom
e-mail: wongsa-artp@cardiff.ac.uk

YINGCUN XIA
Department of Statistics and Applied Probability, National University of Singapore, 
Singapore

The concept of conditional correlation extensively used in the literature reflects an idea 
that correlations of asset returns may be driven by variation in one or more stochastic vari-
ables. This can be straightforwardly adopted to an alternative perspective that the corre-
lations can be written directly as a deterministic function of time, which is the foundation 
of the famous Dynamic Conditional Correlation model and its offsprings. Basically, these 
models attempt to explain dynamic of the unconditional correlation of the returns. In this 
paper we formulate a new specification for the correlation and establish a framework that 
enables a simultaneous modeling of the above ideas, i.e. to model returns correlations 
with respect to time and stochastic variables. We shall show that this new specification is 
not only congruent with recent empirical evidence and theoretical results about the com-
mon factors in the idiosyncratic volatility in financial literature, but also able to provide a 
framework for construction of a new functional measure of portfolio VaR. Furthermore, 
our statistical framework consists of a set of new tools, which essentially make possible 
an empirical analysis of the dynamic (i.e. the time series evolution) and forecasting of the 
conditional correlation coefficient of asset returns. We establish statistical properties of 
these tools and show that they are able to perform well in finite sample. In addition, we 
illustrate the practicality and usefulness of these tools in a modeling of the dynamic of 
conditional correlation coefficient for exchange rate returns of non-EU nations, including 
the UK, Switzerland, Norway and Sweden. It is shown that the new framework is able to 
detect/explain regular, e.g. seasonality and trend, and irregular components of the returns 
correlations.