

Mixed Frequency Data Sampling Regression Models: the R Package `midasr`

Eric Ghysels
University of North Carolina

Virmantas Kvedaras
Vilnius University

Vaidotas Zemlys
Vilnius University

Abstract

Regression models involving data sampled at different frequencies are of general interest. In this document the R package `midasr` is described within a MIDAS regression framework with functional constraints on parameters put forward in work by [Ghysels, Santa-Clara, and Valkanov \(2002\)](#), [Ghysels, Santa-Clara, and Valkanov \(2006a\)](#) and [Andreou, Ghysels, and Kourtellis \(2010\)](#).

Keywords: MIDAS, specification test.

1. Introduction

Regression models involving data sampled at different frequencies are of general interest. In this document we introduce a R package `midasr` for the regression modeling with the mixed frequency data based on a framework put forward in recent work by [Ghysels *et al.* \(2002\)](#), [Ghysels *et al.* \(2006a\)](#) and [Andreou *et al.* \(2010\)](#) using so called MIDAS, meaning Mi(xed) Da(ta) S(ampling), regressions.¹

In a general framework of regressions with functional constraints on parameters, the `midasr` package not only provides similar functionality within a standard R framework of the model specification comparable to that available in the usual functions `lm` or `nls`, but also deals with an extended model specification analysis for MIDAS regressions.

Several recent surveys on the topic of MIDAS are worth mentioning at the outset. They are: [Andreou, Ghysels, and Kourtellis \(2011\)](#) who review more extensively some of the material summarized in this document, [Armesto, Engemann, and Owyang \(2010\)](#) who provide a very simple introduction to MIDAS regressions and finally [Ghysels and Valkanov \(2012\)](#) who discuss volatility models and mixed data sampling.

Econometric analysis of MIDAS regressions appears in [Ghysels, Sinko, and Valkanov \(2006b\)](#), [Andreou *et al.* \(2010\)](#), [Bai, Ghysels, and Wright \(2012\)](#), [Kvedaras and Račkauskas \(2010\)](#), [Rodriguez and Puggioni \(2010\)](#), [Wohlrabe \(2009\)](#), among others.

MIDAS regression can also be viewed as a reduced form representation of the linear projection which emerges from a state space model approach - by reduced form we mean that the MIDAS regression does not require the specification of a full state space system of equations. [Bai *et al.* \(2012\)](#) show that in some cases the MIDAS regression is an exact representation of the Kalman

¹[Ghysels \(2013\)](#) also developed a package for MATLAB which deals with the estimation and information criteria-based specification of MIDAS regressions as well as forecasting and nowcasting of slow frequency series.