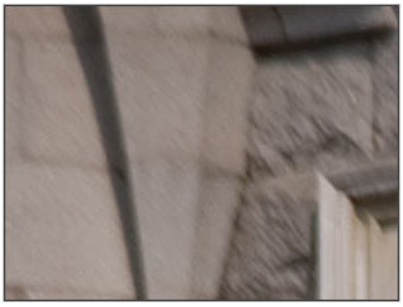
6. Test results

Specific image quality issues

As always, our studio tests are backed up by taking hundreds of photographs with the lens across a range of subjects, and examining them in detail. This allows us to confirm our studio observations, and identify any other issues which don't show up in the tests.

FX format vignetting and corner softness

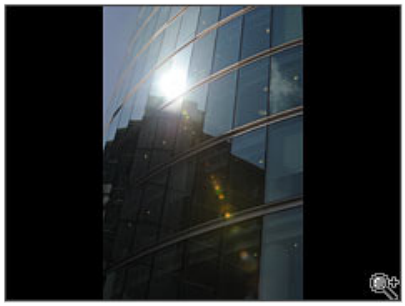
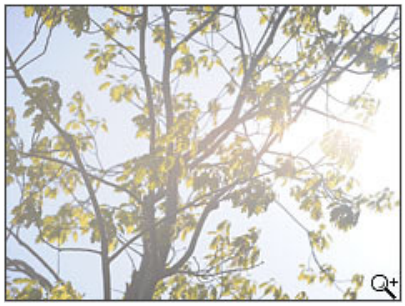
To illustrate the issues identified by our studio tests with some real-world examples, here are couple of shots at 200mm on the Nikon D3; one at F2.8, illustrating both soft corners and vignetting (note the brightness difference between centre and corner crops), and another at F11, illustrating the persistence of corner softness even heavily stopped down. For some users this may well turn out to be a non-issue, but it really isn't something we'd expect to see from a $1600 lens.

	
200mm F2.8, Nikon D3	200mm F11, Nikon D3
	
100% crop, centre of frame	100% crop, centre of frame
	
100% crop, top left of frame	100% crop, top left of frame

Flare

The 70-200mm has a reputation as being somewhat susceptible to flare, and our real-world tests to some extent bear this out. It generally handles backlit conditions perfectly competently, but runs into problems when there is a strong light source either within the frame, or just outside it; and in the worst-case scenario things can go very wrong indeed.

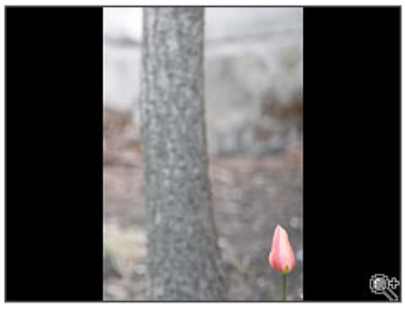
Our two 'real-world' flare examples show this clearly; in the first, at 70mm F8 with a strong light source within the frame, we see a long array of multicoloured (but not particularly attractive) flare spots, with the complexity of the pattern a direct consequence of that 21-element design. This effect is visible at all apertures (even wide open), but sharpens up and becomes more intense in colour on stopping down. In the second shot, at 200mm F8 with the sun just outside the frame, veiling flare has become severe with a huge loss in image contrast; however to be fair this effect diminishes rapidly on rotating the camera further away from the sun.

	
70mm F8, Nikon D3	200mm F8, Nikon D3

Come to think of it, perhaps a revised 70-200mm VR design could benefit from Nano-crystal coating too.

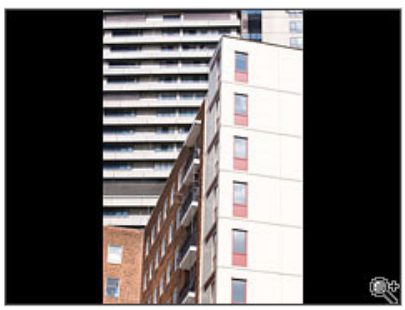
Background Blur ('bokeh')

One genuinely desirable, but difficult to measure aspect of a lens's performance is the ability to deliver smoothly blurred out-of-focus regions when trying to isolate a subject from the background, generally when using a long focal length and large aperture. Here the 70-200mm VR is an excellent performer, producing smooth, attractive bokeh which rarely detracts from the subject.

	
170mm F2.8, Nikon D3	200mm F5.6, Nikon D300
	
50% crop	50% crop

Chromatic Aberration

Chromatic aberration can just occasionally be visible as green/magenta fringing at 70mm on either DX or full frame, but is never really a major issue. The crops below illustrate the worst-case scenario of 70mm and intermediate apertures; of course if you're shooting JPEG with the D300 or D3, you simply won't see chromatic aberration anyway, as both cameras effectively eliminate it in processing.

	
70mm F8, DX (Nikon D300)	70mm F5.6, FX (Nikon D3)

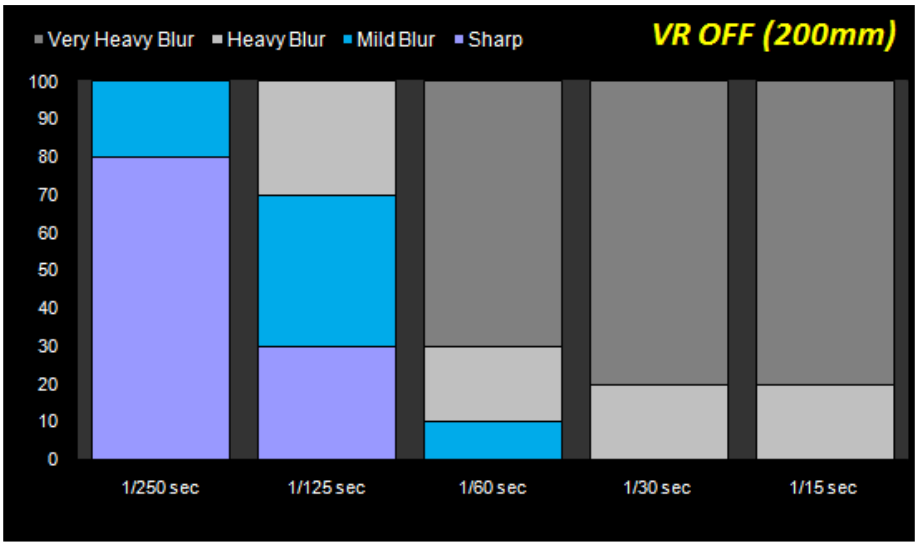
	
100% crop, top of frame	100% crop, left of frame

Optical Image Stabilization

The 70-200mm features Nikon's first generation vibration reduction system, which claims to allow handholding at shutter speeds three stops lower than usual before blur from camera shake becomes apparent. The mechanism is near-silent in use, with just a very quiet whirring noise when operational, and with distinct clicks when it activates and deactivates from the VR group moving in and out of the 'at rest' position.

We've generally found the stabilisation units in SLR lenses to be pretty effective in real-world use, and to quantifiy this, we subjected the 70-200mm to our studio image stabilisation test at the wide and long ends of the range, using the D3 as the test camera. With this combination we'd normally expect to be able to get good results handheld at 1/80 sec at 70mm, and 1/250 sec at telephoto without image stabilisation. The subject distance for these tests was approximately 2m at 70mm, and 6m at 200mm.

We take 10 shots at each shutter speed and visually rate them for sharpness. Shots considered 'sharp' have no visible blur at the pixel level, and are therefore suitable for viewing or printing at the largest sizes, whereas files with 'mild blur' are only slightly soft, and perfectly usable for all but the most critical applications.



70mm VR OFF **200mm VR OFF**

70mm VR ON **200mm VR ON**

As usual, we see an in-lens optical stabilisation system performing well, with Nikon's claimed three stop advantage not too far from reality. One key difference here is not so much the yield of critically sharp shots at slow shutter speeds, as the hugely increased chances of getting usable shots with only mild blur, which would be completely impossible in the absence of stabilisation.

At 70mm, we see a 60% chance of getting usable results at shutter speeds of 1/5 sec, and at 200mm, a 70% chance as low as 1/30sec. Even at speeds a stop slower than these, you'll get 'keepers' hand held if you're prepared to take multiple shots. This therefore greatly increases the lens's versatility in low-light conditions (or indeed any other situation where a slow shutter speed would be desirable).

The VR system on this lens also features automatic panning detection, which disables stabilisation in the direction of movement when it detects the photographer is following a moving subject. A few informal tests in the field showed that this seemed to do a decent job, and worked as advertised when tracking moving vehicles or birds in flight. However the panning detection sometimes seemed to be a little over-sensitive, and occasionally switched to panning mode when shooting a stationary subject, immediately negating the effect of VR. This is annoying as it can mean missed shots, and (unlike on Canon's IS lenses) panning detection can't be turned off.

Finally the lens also has an 'active' mode for shooting from moving vehicles, but we've not had the chance to test this in any meaningful fashion, so can't really comment on its performance.