### Table S1. The 10-fold cross test results of RFB-SSD

|        | mAP(%) | Precision(%) | Recall(%) | F1    | LAMR |
|--------|--------|--------------|-----------|-------|------|
| Fold1  | 86.17  | 89.58        | 87.76     | 0.89  | 0.21 |
| Fold2  | 89.84  | 88.00        | 89.80     | 0.89  | 0.16 |
| Fold3  | 92.31  | 91.84        | 91.84     | 0.92  | 0.12 |
| **Fold4** | **95.90** | **92.16**    | **95.92** | **0.94** | **0.07** |
| Fold5  | 87.67  | 85.42        | 83.67     | 0.85  | 0.20 |
| Fold6  | 87.14  | 84.31        | 87.76     | 0.86  | 0.19 |
| Fold7  | 91.32  | 86.00        | 87.76     | 0.87  | 0.14 |
| Fold8  | 90.13  | 89.58        | 87.76     | 0.89  | 0.15 |
| Fold9  | 93.08  | 91.49        | 87.76     | 0.90  | 0.13 |
| Fold10 | 85.36  | 83.67        | 83.67     | 0.84  | 0.25 |
| Mean   | 89.89  | 88.21        | 88.37     | 0.89  | 0.16 |
| Lower 95% CI | 87.49 | 85.92       | 85.79     | 0.86  | 0.12 |
| Upper 95% CI | 92.29 | 90.49       | 90.95     | 0.91  | 0.20 |

### Table S2. The 10-fold cross test results of ResNet50-PSPNet

|        | GC IoU | Background IoU | mIoU |
|--------|--------|----------------|------|
| Fold1  | 62.44  | 96.21          | 79.32|
| Fold2  | 63.24  | 96.19          | 79.72|
| Fold3  | 58.81  | 95.51          | 77.16|
| Fold4  | 63.37  | 96.4           | 79.89|
| Fold5  | 63.5   | 96.21          | 79.85|
| Fold6  | 60.06  | 95.98          | 78.02|
| Fold7  | 59.33  | 95.74          | 77.54|
| Fold8  | 62.58  | 96.37          | 79.48|
| Fold9  | 64.89  | 96.45          | 80.67|
| **Fold10** | **65.38** | **96.56** | **80.97** |
| Mean   | 62.36  | 96.16          | 79.26|
| Lower 95% CI | 60.75 | 95.93        | 78.34|
| Upper 95% CI | 63.97 | 96.40        | 80.18|
Table S3. The clinical information of gastric cancer used in this study

| Characteristics                  | Testing dataset          | Prospective validation dataset |
|----------------------------------|--------------------------|-------------------------------|
| Male/female, No. (%)             | 23/11(67.65%/32.35%)     | 40/8(83.33%/16.67%)           |
| Age, median, (range), years      | 62.56(11.87)             | 67.31(10.01)                  |
| Tumor size, median, (range), mm  | 3.87(2.58)               | 3.57(1.93)                    |
| Tumor location, No. (%)          |                          |                               |
| Cardia                           | 3(8.82%)                 | 5(10.42%)                     |
| Body                             | 12(35.29%)               | 19(39.58%)                    |
| Pylorus                          | 17(50.00%)               | 23(47.92%)                    |
| Whole stomach                    | 2(5.88%)                 | 1(2.08%)                      |
| Macroscopic types, No. (%)       |                          |                               |
| Borrmann 0                       | 6(17.64%)                | 12(25.00%)                    |
| Borrmann I                       | 0(0.00%)                 | 3(6.25%)                      |
| Borrmann II                      | 2(5.88%)                 | 8(16.67%)                     |
| Borrmann III                     | 23(67.65%)               | 22(45.83%)                    |
| Borrmann IV                      | 3(8.82%)                 | 3(6.25%)                      |
| Depth of invasion, No. (%)       |                          |                               |
| Mucosa and submucosa             | 6(17.65%)                | 12(25.00%)                    |
| Muscularis propria               | 6(17.65%)                | 5(10.42%)                     |
| Subserosa                        | 13(38.24%)               | 17(35.42%)                    |
| Serosa                           | 5(14.71%)                | 10(20.83%)                    |
| Perforating serosa               | 4(11.76%)                | 4(8.33%)                      |
| Stage, No. (%)                   |                          |                               |
| Early gastric cancer             | 6(17.68%)                | 12(25.00%)                    |
| Advanced gastric cancer          | 28(82.35%)               | 36(75.00%)                    |
| Lymph node metastasis, No. (%)   |                          |                               |
| Metastasis                       | 16(47.06%)               | 21(43.75%)                    |
| No metastasis                    | 18(52.94%)               | 27(56.25%)                    |