

Memory Level Parallelism

```
ind0 = 0;
bound = ecx-eax;
bb10:
ind1 = 0;
bb20:
    edx = *(memLd+esi+(edi*ind0+(eax+ind1)*4)/sizeof(int));
    *(memSt+ebx+(edi*ind0+(eax+ind1)*4)/sizeof(int)) = edx;
    ind1 = ind1+1;
    if(ind1 != bound)
        goto bb20;
    ind0 = ind0+1;
    if(ind0 != bound)
        goto bb10
bb_end:
```

Vector to test: (*,*)

Add barrier

```
ind0 = 0;
bound = ecx-eax;
bb10:
ind1 = 0;
bb20:
    edx = *(memLd+esi+(edi*ind0+(eax+ind1)*4)/sizeof(int));
    *(memSt+ebx+(edi*ind0+(eax+ind1)*4)/sizeof(int)) = edx;
    ind1 = ind1+1;
    if(ind1 != bound)
        goto bb20;
barrier();
ind0 = ind0+1;
if(ind0 != bound)
    goto bb10
bb_end:
```

Vector to test: (=:*)

```
ind0 = 0;
bound = ecx-eax;
bb10:
ind1 = 0;
bb20:
    edx = *(mem+esi+(edi*ind0 + (eax+ind1)*4)/sizeof(int));
    *(mem + ebx+(edi*ind0+(eax+ind1)*4)/sizeof(int)) = edx;
    ind1 = ind1+1;
    if(ind1 != bound)
        goto bb20;
    ind0 = ind0+1;
    if(ind0 != bound)
        goto bb10
bb_end:
```

Thread Level Parallelism at the outer level

```
ind0 = 0;
ind0_1 = (ecx-eax)/2;
bound = ecx-eax;
bound_0 = (ecx-eax)/2;
bb10:
ind1 = 0;
bb20:
    edx = *(mem+esi+(edi*ind0 + (eax+ind1)*4)/sizeof(int));
    *(mem + ebx+(edi*ind0+(eax+ind1)*4)/sizeof(int)) = edx;
    ind1 = ind1+1;
    if(ind1 != bound)
        goto bb20;
    ind0 = ind0+1;
    if(ind0 != bound_0)
        goto bb10;
    if(bound <= bound_0)
        goto bb_end;
bb_10_dup:
ind1_1 = 0;
bb20:
    edx = *(mem+esi+(edi*ind0_1 + (eax+ind1_1)*4)/sizeof(int));
    *(mem + ebx*ind0_1+(eax+ind1_1)*4)/sizeof(int)) = edx;
    ind1_1 = ind1_1+1;
    if(ind1_1 != bound)
        goto bb20;
    ind0_1 = ind0_1+1;
    if(ind0_1 != bound)
        goto bb_10_dup;
bb_end:
```

Vector to test: (<,:)